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MAIDEN CREEK FILTERS, SHOWING ROOF CENTERING AND CONSTRUCTION TRACK

MAIDEN CREEK FILTERS

Slow Sand Filters at Reading, Pa.—Three Million Gallons per Acre per Day—Details of Design—Methods of Construction—Contractor's Plant—Pumping Station—Use of Copper Sulphate Temporarily

IN our issue of April 20 appeared a general description of the water works of the city of Reading, Pa., and a more detailed one of the Bernhart sand filters and the Buttonwood street distributing reservoir. As stated there, the large part of the water supply of the city is obtained from Maiden Creek, a tributary of the Schuylkill River, with a drainage area of 210 square miles. The dam for impounding this creek and the conduit for conveying water to the filter beds were described in our issue of June 1. As Maiden Creek is more or less polluted and has been thought to have been responsible for typhoid fever in the city, it was decided to filter the water, and slow sand filters are being constructed for that purpose.

The filters will be 10 in number, each 98 by 206 feet inside measurements, and are assigned a combined capacity of 10,000,000 gallons per day, with one unit out of commission for cleaning and one for storing sand, or about 3,000,000 gallons per acre per day. The effluent from the filters will flow through 1,500 feet of a 36-inch cast-iron pipe to a pump well located a few feet from the pumping station, which has been in

service for some years, where pumps will force the filtered water, as they now do the unfiltered, through $6\frac{1}{2}$ miles of 36-inch and 24-inch pipe to a distributing reservoir about 212 feet higher. The water which is at present being pumped from Maiden Creek is treated with copper sulphate at the pump well.

The filters are placed at such an elevation that high water in the creek, on the banks of which the filters are located, will not reach them; and to further protect them a retaining wall of heavy masonry and cement mortar has been built along the entire length of the filters and in front of the pumping station.

Proposals for the construction of the Maiden Creek filters were received and opened on September 22, 1908, and the contract was awarded to the H. E. Ahrens Company, the lowest bidders, and the award was ratified by Council on September 28. Construction work was begun on October 13 of the same year, the balance of that year and part of 1909 being consumed in clearing and removing the top soil and starting a part of the excavation and retaining wall.

During the winter quite an extensive plant was erected by



RETAINING WALL AT MAIDEN CREEK FILTERS

the contractor for handling the work. This plant consists of railroad sidings; a rock crusher, elevator and storage bins; an inclined railroad with a dump at the end for piling materials and loading cars; a considerable amount of narrow gauge contractor's track, with cars to be pushed by hand or hauled by horses; a steam plant for operating the crusher, derricks, etc.; together with a considerable amount of the ordinary contractors' tools. The rock is crushed with Altman and Champion crushers. The cement is mixed with a Haines mixer and carried to the site of the filters in dump cars furnished by the Arthur Koppel Company. An Erie City locomotive is used for switching the freight cars to the several side tracks. The crusher is kept working continuously and in general keeps a considerable supply of broken stone ahead of the immediate needs; and, to avoid the necessity of unduly large bins, the surplus stone is placed in piles a short distance from the crusher. For removing the stone from the bins to these piles, buckets are used, manufactured by the Browning Engineering Company of Cleveland, which are handled by a large derrick.

The plant is 200 or 300 feet from the filters and at a slightly greater elevation, so that it is comparatively easy for the cars, loaded with concrete, to be pushed by hand to the site of the filters. In order to distribute the concrete a considerable amount of sectional contractors' track is laid along the near side of the filters, with branches running on trestles along the lines of the partition walls between filters, a turntable serving to switch the cars between the main track and these several branches. The illustration at the head of this article shows the track leading from the crusher plant, a turntable, the track along the near side of the filters and one of the branches along a partition wall.

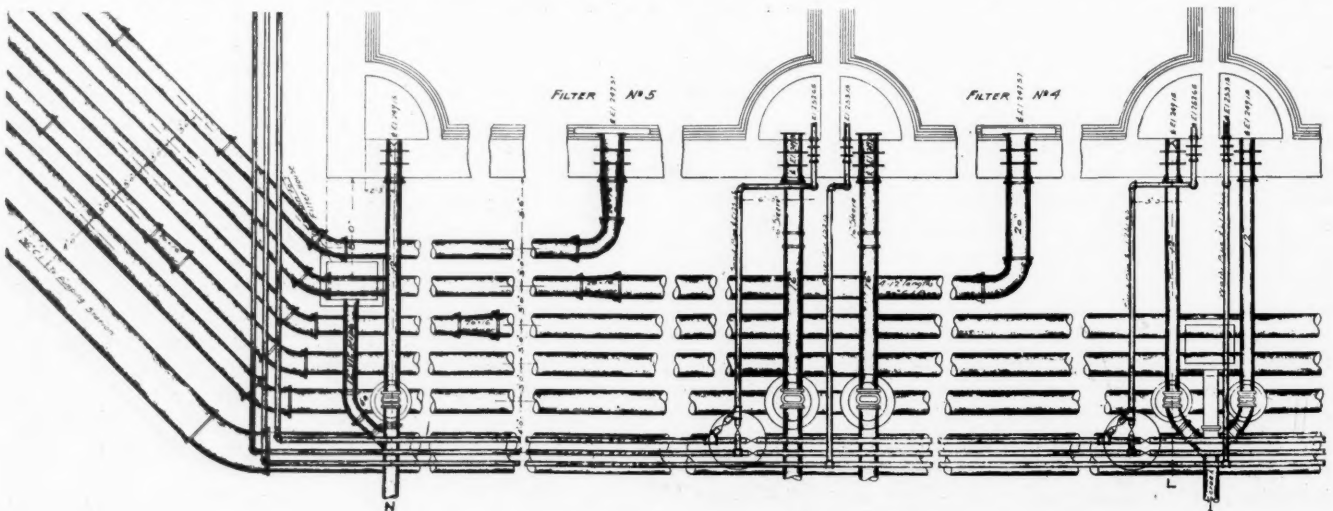
In constructing the outside and partition walls the concrete was dumped from the cars directly into the forms. For the floor, pier foundations, piers and other concrete work within the walls the concrete was dumped from the cars through chutes into large mortar boxes at the bottom of the filter, where it was remixed, to remedy any slight segregation of materials which may have taken place, and carried to the point

where needed in hand cars running on portable tracks laid in the bottom of the filters.

Except for their general dimensions these filters are similar to the Bernhart filters described in the issue of April 20. The piers are the same dimensions and spaced the same distance apart, and the plan of the foundations, floor blocks and floor slabs, the details of the forms for roof arches, the depth of sand, etc., apply to the Maiden Creek filters also. The interior distance from top of sand to intrados of roof arch, however, is two feet greater in the Maiden Creek than in the Bernhart filters. The drainage system also differs somewhat in details, the lateral drains consisting of 10-inch split vitrified pipe instead of 6-inch pipe, as in the Bernhart filters; and the main drain consisting of a conduit 2 feet 6 inches wide and high, the top composed of a 30-inch split vitrified pipe which rests upon a rectangular concrete box with bottom and walls 8 inches thick, whereas in the Bernhart filters the main drain is an 18-inch vitrified pipe. The area of each Maiden Creek filter, it will be noticed, is about double that of each Bernhart filter, so that the under-drainage system has about 50 per cent. more capacity per square foot of drainage area in the Maiden Creek than in the Bernhart filters.

In general, the filters occupy a length of about 500 feet along the south bank of Maiden Creek, the elevation of the bottom of the filters being about 6 feet above the ordinary level of the water in the creek and the surface of the fill over the top of the filters being about 24 feet above the water level. The original ground surface sloped rapidly down toward the creek, there being a maximum difference in elevation between the highest and lowest points covered by the filters of 26 feet. To intercept the run-off from the hill above the filters a 4-foot brick gutter will be carried along the entire upper side of the filters and along one end, discharging into the river through a 15-inch vitrified pipe.

The filters are arranged in two sets of five each, each set forming a rectangle, but the two rectangles not being in the same line, this arrangement having been made to adjust the filters to the topography and economize in earth work. Room is left on the ground purchased by the city for two more filter beds, to be constructed when increased consumption may require. Between the two sets of filters and near the creek is a filter control house, where the flow from the several filters will be controlled, analyses made of the water, etc. Here also is a lighting and pumping plant. The filter house is 69 feet by 44 feet 6 inches, outside dimensions, with an extension at one corner of 21 feet 6 inches by 24 feet. The foundation walls of the filter house are of concrete. In the construction of these was experienced some difficulty, in that water which collected in the excavation after a heavy rain storm softened the soil around the foundations and allowed one end of the foundation walls to settle, opening up two vertical cracks in the side walls from one-fourth to three-fourths of an inch wide. The superstructure is of red bricks and granite, the inside of the building



PLAN OF PIPING FOR FILTERS 4 AND 5

being lined with gray bricks throughout. The ceilings are of yellow pine lining. The roof is covered with slag roofing. The building is lighted throughout with electric lights, the current for which is generated by engines in the building itself.

The piping laid in connection with the filters was carefully designed with a view to efficient control of their operation, and an unusual amount of pains has been taken in perfecting the details of the same. The accompanying plan and photograph give some idea of the general layout. These pipes consist of supply pipes to the filters; other pipes for removing the filtered effluent; small pipes for supplying water under pressure for transporting the sand and other small pipes for carrying the sand from the filter beds to the sand washers. Most of these are controlled by valves at the filter house, but certain of the small pipes and those supplying the water from the conduit to the filters are operated by valves located in manholes near the respective filters.

The principal quantities of material covered by the contract were estimated at 115,000 cubic yards of excavation, 15,000 cubic yards of 1:2:4 concrete, 600 cubic yards of 1:3:6 concrete, 5,050 cubic yards of gravel and coarse sand for under-drains, 21,850 cubic yards of filter sand, 2,020 lineal feet of 30-inch split vitrified pipe, 12,000 lineal feet of 10-inch split under-drains, together with considerable quantities of brick and stone masonry, gutters, roads, walks, sodding, drain pipes, etc. The contract prices of the more important items were as follows: Excavation, 50 cents per cubic yard; 1:2:4 concrete (not including cement), \$4.30; 1:3:6 concrete (not including cement), \$3.25; broken stone or gravel for under-drains, \$1.50 per cubic yard; placing filter sand (furnished by the city), 35 cents per cubic yard; 30-inch split vitrified pipe, \$1.47 per lineal foot; 10-inch split under-drain, 20 cents per lineal foot; the filter house complete, \$21,210.

Cement and other materials used in the filter construction, as well as in other work done by the department, are tested in the testing laboratory at the executive office building. The cement laboratory contains a Riehle tension machine, soapstone moist closets, sand shaker, galvanized iron tanks for briquettes, gang molds for briquettes, steaming apparatus, Vicat needle apparatus, cement sieves, etc.

This plant, like all other work of the department, was designed and is being constructed under the charge of the superintendent, Mr. Emil Nuebling. Mr. Mandes Golder is resident engineer.

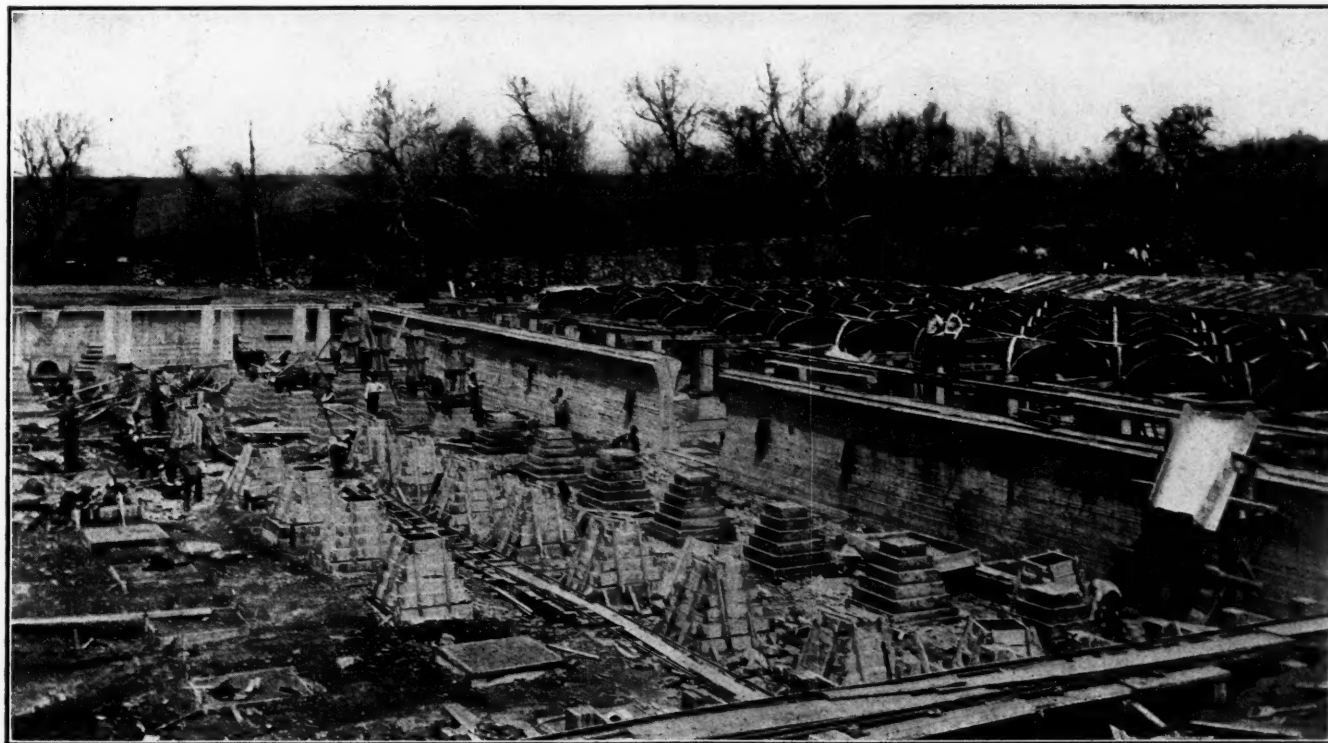


VIEW OF PIPING SHOWN ON PLAN, PAGE 110

The Maiden Creek pumping station is provided with a Worthington low-duty pump 29 inches by 50½ inches by 22¼ inches by 48 inches; a Worthington high-duty pump 30 inches by 60 inches by 26 inches by 48 inches, and an Allis-Chalmers pump 30 inches by 56 inches by 84 inches by 28¼ inches by 60 inches. According to the latest public report, the average duty of the first-named pump for the year was 48,792,759; that of the Worthington high-duty pump was 69,209,938, and that of the Allis-Chalmers pump was 122,580,501. These duties are based on the ratio between the work done by the pumps and the coal consumed, with no deduction for ashes. About 2,500 million gallons are pumped at this plant in a year.

There are four boilers, each of 175 horse-power, only two of which are in use at a time. They are operated with forced draught. Wilkinson automatic stokers are used, run by water motors. Although soft coal is used, there is absolutely no smoke issuing from the chimney at any time, only a haze appearing when the forced draught is operated at its maximum.

The copper sulphate which is applied to the creek water runs in a fine stream into the suction well from a wooden barrel through an ordinary wood vinegar faucet. Metal would be destroyed by the sulphate. The water, in entering the suction well, passes through a screen. Should this screen become so clogged as to cause a loss of head of more than 0.4 foot, an alarm rings in the pumping station.



MAIDEN CREEK FILTERS, SHOWING PIER FOUNDATIONS

DUST PREVENTION EXPERIMENTS

Waste Sulphite Liquors at Washington—Slag Used in Several Ways at Youngstown—Office of Public Roads Experiments

THE Office of Public Roads of the U. S. Department of Agriculture, of which Mr. Logan Waller Page is Director, has recently published a report concerning the experiments in dust prevention and road preservation conducted by the office during 1909. These consisted in experiments with waste sulphite liquors in Washington; with slag, slag and lime, slag and waste sulphite liquor, and slag and tar at Youngstown, O., and tar, oil, artificial asphalt preparations, brick, cement and slag at Ithaca, N. Y., which last will be described next week.

WASTE SULPHITE LIQUORS

The waste sulphite liquors were used in five different forms. The first was a preparation furnished by the manufacturer in 60-gallon barrels, which was a dense, sticky liquid, miscible with water and having a specific gravity of from 1.267 to 1.270 at 25° C. Its binding value depends upon the presence of so-called calcium-magnesium-ligno-sulphonate, which is produced in the manufacture of wood pulp according to the sulphite process. This material was applied to a macadam driveway in the Agricultural Department grounds, which had been built of trap rock, with a soft limestone binder, and is subjected to a moderate amount of light traffic. It was applied by means of an ordinary 300-gallon sprinkling cart, a mixture of equal parts of the preparation and of water being employed. The roadway was sprinkled three times with this mixture at the rate of 0.54 gallons per square yard, or 0.27 gallons of the preparation itself. The section treated was 615 feet long and 16 feet in width, or a total of 1,093 square yards. The mixture was fairly well absorbed by the road, but a small amount was lost by drainage to the gutters.

This road had previously become quite dusty in dry weather. This sulphite preparation was applied on March 17th, and until the middle of May it laid the dust successfully and bound the road surface well. Rains seemed to wash out the material much less than might have been expected. About May 15th the road showed signs of becoming dusty, and was watered a number of times. On June 1st another treatment of the sulphite liquid preparation in a 20 per cent dilution was given for a width of 12 feet in the center of the road. This was applied at the rate of 0.366 gallon of solution, or 0.073 of the preparation per square yard. This second application laid the dust satisfactorily for a period of six weeks, after which the road slowly reverted to its original condition, although the excellent binding value of the material was apparent for some time later.

No charge was made for this material, but it is figured at a cost of 12 cts. per gallon, delivered at the road. The labor for the first application consisted of two laborers bailing the liquor for three hours and one sprinkling cart for the same length of time. Figuring the labor at \$2 for eight hours and the cart at \$5, this gives a total cost of labor of \$3.38, or of \$0.0031 per square yard. The cost of the material was figured at \$0.0324 per square yard, making a total cost per square yard of 3.55 cts. In the second application two laborers bailed liquor for one-half hour and the sprinkling cart was employed for 1½ hours, making the total cost \$1.19, or the cost per square yard \$0.0011 for labor and \$0.0088 for material; or cost per square yard of a little less than 1 cent.

Two experiments were made with crude waste sulphite liquor on a road which received somewhat less travel than the one previously mentioned. The material was obtained from a pulp and paper company, only one barrel being available for use. This was applied to 90 square yards adjoining the section first described at the rate of one-half gallon per square yard, by means of common garden watering pots, and was broomed into the surface. The material was readily absorbed by the road, but did not appear to be as satisfactory a binder as the first preparation. Another section of 90 square yards was treated in the

same way with a sulphite liquor obtained from another pulp and paper company and having a specific gravity of 1.049. This was more readily absorbed than the other liquor, but seemed to produce a less satisfactory surface condition. The cost of labor in applying these was about 0.8 cts. per square yard. They proved little more effective than water, so far as laying the dust was concerned. It is possible, however, that if the crude liquor were applied daily as in ordinary water sprinkling, its use would prove economical in localities where it is produced in that the base would concentrate in the road and eventually become a valuable binder.

Two other stretches of road were treated with concentrated waste sulphite liquor having a specific gravity of 1.220. In one of these the liquor was diluted with an equal volume of water and the mixture applied to 114 square yards at the rate of 0.44 gallon per square yard. The appearance of the road after treatment was quite similar to that produced by the use of the preparation first described. Another section of 45 square yards was treated with this same concentrated liquor, used full strength, at the rate of one-half gallon per square yard. It was not readily absorbed by the road, but after being broomed in produced a well-bonded surface. For the first six weeks the two sections of road treated as last described were as satisfactory as that of the first experiment; but owing to lack of material it was impossible to make a second application.

SLAG COMBINATIONS

During the summer the Office of Public Roads, in co-operation with the Carnegie Steel Company, experimented with a view to determining the best method of utilizing slag for road construction, the company having large amounts of slag which it could furnish for this purpose at little cost. This slag consists of the impurities and flux which separate from the iron in the reduction of ores, and that used was hauled in cars to the edge of a bluff and there dumped and allowed to run out in thin layers to cool. The slag, even that in the same bank, may vary greatly in composition, in hardness and in structure. Where it is deposited in large banks it is most easily excavated by means of a steam shovel which starts at the bottom and plows up through the material, breaking up and at the same time mixing the different layers. One-third of the slag obtained in this manner at Youngstown was found to pass a 3/4-inch screen, and of the coarser material about one-third was less than 1 1/2 inches in greatest diameter, while only a very small per cent was over 3 1/2 inches. In addition to this there is a slag formed in the operation of open-hearth furnaces and in different processes of manufacturing steel. The former possesses many desirable properties, such as extreme hardness, toughness and frequently excellent cementing properties.

In the experiments at Youngstown the blast furnace slag was taken from a bank that had aged for two years, and the material of which came from six furnaces of the same type. A steam shovel was used to load the slag from the bank into large gondola cars, which dumped it into a chute through which it was carried to a screen which separated it into proper sizes. At first a 3 1/2-inch screen was used, the finer screenings falling into one car, the coarser into another. The coarse material was usually very soft and crumbly and was discarded, the finer being used for the experiments. The screened slag eventually obtained was quite uniform in character, but was further screened into different sizes, taken by rail to about 1 1/2 miles from where it was to be used, from which point it was hauled by wagon.

The road treated was located just outside the city limits of Youngstown. The soil was a gravelly clay, sticky when wet and dusty when dry. The road was level for about 100 feet, but elsewhere the contour was rolling, the maximum grade being 4.5 per cent. The road is used by farmers in hauling their produce to town, and sustains also a heavy auto and a little carriage traffic. The grading had already been done by the county, the total cost for the entire 2,754 feet of road, including retaining walls, being over \$2,000.

Seven experiments were made with the use of slag. In the

first a regular macadam road was built of the material, the first course consisting of slag ranging from $3\frac{1}{2}$ to $1\frac{1}{2}$ inches, laid loose to a depth of 9 inches and rolled until firm. The second course was composed of $\frac{3}{4}$ -inch to $1\frac{1}{2}$ -inch slag laid 4 inches deep at the center and $2\frac{1}{2}$ inches at the side. This was rolled until smooth, but did not become absolutely firm until the top course of screenings had been applied, these ranging from $\frac{3}{8}$ -inch to dust. After spreading and slightly rolling the screenings, water was applied in the usual way and the rolling continued. In a very short time the surface was compacted and the water began to run off, but as the road dried out the surface became crumbly and required additional rolling and sprinkling. Experience with this section points to the advisability of sprinkling the surface every day for about ten days in order to develop the full binding value of slag screenings. This section was 500 feet long and contained 777 square yards. The first course was applied at the rate of $\frac{1}{4}$ cubic yard per square yard; the second at the rate of .09 cubic yard, and the screenings at the rate of .042 cubic yard per square yard. The cost per square yard was as follows: Slag on siding, 18.95 cts.; hauling and laying, 20.15 cts.; rolling and sprinkling, 7.42 cts.; a total of 46.52 cts. per square yard.

To determine whether the cost could be reduced without bad results, a section was laid composed of $\frac{3}{4}$ -inch to $3\frac{1}{2}$ -inch slag laid 12 inches deep at the center and 9 inches at the side. There was considerable lack of uniformity between different loads of the material. Since the course was thick, it required more rolling than the first course of the first experiment. The road was finished with slag screenings as in the first experiment. When inspected last fall the surface was well bonded. This section was 300 feet long, containing 456 square yards. There were used in it .292 cubic yards of slag per square yard, and .042 of slag screenings. The cost per square yard was 16.6 cts. for slag on the siding; 17.6 for hauling and laying, 9.14 for rolling and sprinkling; a total of 43.34 cts. per square yard, or about $3\frac{1}{6}$ cts. less than experiment No. 1.

In experiment No. 3 slag varying from $3\frac{1}{2}$ inches to dust was laid 9 inches deep, and on this a second course of $3\frac{1}{2}$ inches to $\frac{3}{4}$ -inch material 6 inches deep at the center and 4 inches at the side. Each course was well rolled, and the results appeared similar to those of experiment No. 2. This section was 325 feet long and contained 506 square yards. There was used in the first course .25 cubic yard of slag per square yard; in the second, .139 cubic yard and .042 cubic yard of screenings. The costs per square yard were 21.41 cts. for slag on siding, 22.75 cts. for hauling and laying, 7.80 cts. for rolling and sprinkling; a total of 51.96 cts. per square yard.

Experiment No. 4 employed the same construction as No. 3, except that fine open-hearth slag screenings, varying in size from $\frac{1}{4}$ inch to dust, were used in place of the blast furnace slag screenings. When puddled this material set very quickly and produced a firm surface. These screenings were crushed from the smaller pieces of slag produced by the "skull-cracker," and were then placed in a dry rolling mill, where they were ground to fine screenings, a large percentage becoming dust. It is found that this slag, when finely powdered, frequently has high binding properties, owing to the presence of free lime and silicate minerals, which, when moistened, produce a true hydraulic set. The total cost was 50.21 cts. per square yard.

In the fifth experiment the same methods and materials were employed as in the first, except that 5 per cent of powdered quicklime was mixed with the slag screenings. This was done to hasten and increase the bond of the surface. In mixing, the fine slag was measured out on a mixing board and the 5 per cent of lime spread on top. This was turned twice and placed directly on the road by wheelbarrows. Upon being sprinkled and rolled the surface bonded very quickly and became solid. It did not crumble, as did section No. 1, nor "calk up" under traffic. It was observed that better results were obtained from very fine screenings than from coarser material. The total cost was 48.18 cts. per square yard.

In the sixth experiment the same method was employed as in the first, except that a concentrated waste sulphite liquor prep-

aration of 1.273 specific gravity, similar to that described in the beginning of this article, was mixed with water and used to puddle the surface. The sprinkler, after having been filled with water, was conducted over sections No. 1 and 2 and enough water sprinkled on these sections to leave space in the tank for the desired amount of sulphite liquor. This liquor was then poured into the sprinkler and it and the water thoroughly mixed with a hoe. This mixture was then used in the sixth experiment. As the solution tended to run toward the gutter, care was taken that the centers received the heaviest treatment. At first one part of the liquor to seven parts of water was used, the thin solution penetrating several inches into the wearing surface. As the voids were gradually filled the mixture was strengthened to prevent the liquid from running off the road. The last mixture used was composed of equal parts of water and liquor, only one-half of a tank full being applied at a time. The treatment was repeated from day to day as the material was absorbed, the surface being rolled shortly after each sprinkling, as otherwise it became so sticky that it would pick up under the wheels of the roller. After one gallon of the sulphite liquor per square yard had been applied a very smooth surface was obtained, which did not calk up under traffic. A few days later, however, it was found badly calked and blistered for a depth of $\frac{1}{8}$ inch, but below that was solid. It was sprinkled with water and well rolled again, which put the road in good shape, but not as smooth as before. The total cost was 61.31 cts. per square yard.

In the seventh experiment was likewise used the same method as in No. 1, the second course being 4 inches deep and consisting of a mixture of 3 parts of slag from $1\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter to one part of slag from $\frac{3}{8}$ inch to dust, mixed with 6 per cent of tar. The slag was heated in a large pan until dry and warm to the hand, one-half of the pan being used for heating each size of material. The coarse slag was first shoveled into a measuring box placed upon the mixing board, and the finer slag was placed on top. After the two had been turned twice the tar, which had been heated in a two-barrel pot, was poured over the slag and the whole was well mixed and immediately applied to the road. The mixture was rather dry, and after rolling it was found necessary to flush the surface with tar, for which purpose two large sprinkling cans were used, the holes in their nozzles having been enlarged. About one-fourth gallon of tar per square yard was applied in this way, making a total of about $1\frac{1}{2}$ gallons. A thin coat of slag, $\frac{3}{8}$ inch to dust, was then spread over the surface and rolled in. The tar was obtained from a by-product coke oven, where it had been refined by distilling off about 17 per cent of the lighter oils and water. When inspected last fall this section was in excellent condition. This section was 300 feet long, with an area of 456 square yards. The first layer of slag contained .25 cubic yard per square yard, the second layer .09 cubic yard and the screenings .022. Of tar, 1.545 gallons were used per square yard. The cost per square yard was 17.97 cts. for slag on the siding, 19.10 cts. for hauling and laying, 13.49 cts. for tar binder, 12.72 cts. for applying binder, 4.17 cts. for rolling and sprinkling, and 1 cent miscellaneous, giving a total cost of 68.45 cts. per square yard.

PHILADELPHIA SEWAGE DISPOSAL INVESTIGATION

In our issue of October 27, 1909, was described the experiment station in which the city of Philadelphia is endeavoring to solve the problem of the most economical method of treating its sewage. Arrangements are now being made for experiments on a larger scale; or perhaps it would be more correct to say, verifying conclusions from experiments in an actual working plant. Bids for constructing a sewage disposal works on Pennypack creek were received on July 20, including a gas-producer pumping engine, pumping station and force main. Sewage will be collected from the combined sewers now emptying into that creek and pumped 3,000 feet through a force main to a disposal plant. This plant will consist of reinforced-concrete sedimentation tanks built and operated as Emscher tanks,

the effluent from which will be treated on a sprinkling filter about one acre in area. It is proposed to secure a constant head on the sprinkler nozzles by having the effluent from the tanks pass through a constant-head tank. The effluent from the sprinkling filters will be clarified in a sedimentation basin, and experiments will also be conducted in disinfecting the effluent with hypochlorite of lime. It is proposed to run the sludge from the sedimentation tanks onto a sludge lagoon, where it will be dried out, and the matter remaining will be either burned or spread upon land. This plant, which can probably treat about three million gallons per day, is expected to cost about \$125,000.

PAVEMENTS FOR CAMBRIDGE

THE city of Cambridge, Mass., some time ago appointed a commission consisting of Superintendent of Streets Edward W. Quinn, ex-Superintendent Geo. M. Clukas, City Engineer Louis M. Hastings, all of Cambridge, and Harrison P. Eddy of Boston as Consulting Engineer, to make a study of the streets of the city with a view to making a comprehensive plan for their development and improvement. This committee has made a preliminary study of the subject and on June 21st presented a preliminary report, recommending such improvements as it seemed desirable to carry on during the present season and which could be definitely decided upon with the certainty that they would not conflict with a more comprehensive plan which it is the instructions and aim of the committee to devise. While such recommendation must of necessity be largely controlled by local conditions, yet the conclusions, accompanied by the considerations upon which they are based, will be of interest to others having similar problems to solve.

Prospect street was paved several years ago with brick on concrete. Most of it is badly worn and one stretch had been torn up for the construction of a subway and temporarily replaced with granite blocks. There are two railway tracks in the street. The committee recommends that the present pavement be replaced by wood block on a concrete foundation. It will be noted that we have here, in the center of the city, a combination of an existing foundation of concrete about five inches below grade, and street railway tracks.

Albany street is paved with granite at the north end, and this and Waverly street connecting with it are subject to heavy traffic, and still more severe traffic conditions will probably arise. The streets are built on filled ground where there is a probability of further settlement. A concrete base is therefore not recommended, but a temporary pavement instead. The committee recommends granite block seven inches deep laid upon a six-inch broken-stone base thoroughly rolled and composed of "run of crusher" stone; the joints to be grouted with Portland cement.

The section of Charles street under consideration is in a district where teaming is moderately heavy. The committee recommends for this granite block four inches deep laid upon a concrete base and with joints grouted with Portland cement.

Putnam avenue offers a favorable route for traffic from the southeast portion of the city to the central portion. The eastern end is already paved with brick. The traffic, while being voluminous, will not be of the heaviest character. The committee recommends vitrified brick on a concrete base, the joints grouted with Portland cement filler.

For traffic passing from the center of the city to the cemeteries and towns lying west Mt. Auburn street is a very important thoroughfare. The traffic upon it is not heavy, but is voluminous, and the presence of street railway tracks is instrumental in confining the traffic to a narrow roadway on either side, which puts upon the pavement a more severe test than would be the case were the street free from tracks. In 1908 a portion of this street was paved with bitulithic pavement and the committee recommends that this kind of pavement be extended under a five-year guarantee.

For traffic between the center of the city and towns lying north and west Massachusetts avenue forms the principal thoroughfare. This has been improved with various kinds of pave-

ment, and the committee recommended that this also be paved on the unimproved portions with bitulithic, which kind of pavement had already been in use on a part of the street.

MUNICIPAL TELEPHONE IN HULL

THE city of Hull, England, has for some years been operating a municipal telephone system, and information and statistics concerning the operation have been given by the American Consul at that city, Mr. Walter C. Hamm. The statistics covering the five years ending March 31, 1910, show the capital account, or money borrowed for establishing the system, to have been \$221,104.56 in 1905, which had been increased by extensions to \$293,522.94 in 1910. The profit increased from \$7,713.40 in 1905-6 to \$15,816.12, and in 1909-10. This profit has been applied part to a sinking fund and the balance to a reserve fund, except for an amount deducted on three occasions for special charges. The total amount applied to the sinking fund during the five years has been \$37,063.25, and that placed in the reserve fund has been \$22,138.55. Thus, in five years the city has accumulated a sinking and reserve fund amounting to more than 20 per cent of the amount expended in establishing and extending the system.

The city began its municipal operation of the telephone by adopting a schedule of rates which cut the previous charges of the National system nearly in half. It has maintained these rates and so compelled the National system to reduce its rates to the same basis. In this way it has saved the telephone users of Hull a sum larger than the original cost of constructing the system. The tariff charged by the municipal system is as follows: Business 'phone, unlimited number of calls, \$30.65; residence, unlimited number of calls, \$24.33; five-party line, 720 calls, \$14.59; residence, two-party line, unlimited number of calls, \$19.46; 1,000 calls, exclusive line, \$24.33.

The proposition made in 1904 to establish municipal telephones was strongly opposed by both city council and business men; but Mr. Hamm states that those who most vigorously objected to the enterprise are to-day loudest in their praise over its success and the benefit which it has conferred on the community.

These results of municipal operation in Hull are attracting wide attention throughout England, and several other municipalities are seriously considering establishing municipal systems.

IMPURE SPRING WATER

REFERENCE has been made at intervals in these columns to cases where spring water has been found to be impure. A case of this kind was discovered some time ago by an engineer of the New York State Department of Health. A village which was drawing its supply from a spring which issued from shaley limestone found its supply suddenly ceasing almost entirely. Investigation led to the discovery that the probable source of supply of the spring was a small stream flowing through a valley on another watershed about a mile away, which disappeared entirely in the limestone fissures in dry weather. A farmer who used this stream for watering his stock had a short time before built a dam across it to store the water during dry weather, thus cutting off the flow of the stream which probably supplied the spring. Corroborating this, analysis of the water in the stream and of that from the spring were practically identical.

It was also learned that the stream was polluted to such an extent as to be unsafe, and thus the spring flowing out of a wooded mountain side was really an unsafe source of supply. Where streams issue from comparatively fine sand or sandstone through which they have flowed for even a few hundred feet the probability is that the water issuing therefrom is safe, unless it was very impure before entering the sand or other filtering medium. Where, however, it flows through crevices in limestone or other rock there is practically no purification except such as would occur in a surface stream; and possibly not even so much, as the purifying influence of oxidation and animal and vegetable life would be much less, if not entirely wanting.

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JULY 27, 1910

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Economy In Municipal Services

LAST week we referred editorially to the possibilities in the way of economy which might result from the further study and adoption in proper combinations of the various processes of sewage treatment. Much the same ideas might be applied to water purification as well. In fact, although scientific study of the purification of water was some years ago considered to be in advance of that of sewage, there appears to have been a failure during a period of several years to introduce any new methods or any improvements except some minor ones in construction details of filters. It was for some years held that slow sand filters were the only practical means of purifying water for potable purposes. Several years ago it was demonstrated that rapid sand filters were of great value in removing suspended matter, and also that a high degree of bacterial purification could be obtained by them. Further advance lagged, however, except for the introduction of preliminary treatment by means of pre-filters and sedimentation—an important improvement in the art.

Within the last two or three years there have been developed to a physically and commercially practical point and recognized as scientifically sound several methods of treating water for

the destruction of bacteria and other vegetable and animal growths, such as the use of copper sulphate for algæ, and bleaching powder and ozone for bacteria. In spite of the apparent failure of ozone treatment at Lindsay, this failure—if such it is—is probably one of mechanical details only, and there is now no dispute of the fact that ozone is theoretically one of the best means of destroying bacteria, although much yet remains to be done in the way of perfecting mechanical details and decreasing cost.

When slow sand filtration was the only recognized method of purifying water for a potable supply the only question to be settled was whether there was sufficient necessity for purification to warrant the expense of such filters, the difference in structural features between two plants being frequently such as to be noticed only by the expert, in many cases determined by the preference of the engineer rather than any scientific reasons therefor. Now, however, the matter is much more complicated, and not only efficiency, but economy, demand that the design of a purification plant be placed in the hands of one who is absolutely up-to-date in his knowledge of what has been found and proven concerning the various methods and devices of water purification.

How many and what of the several methods available it is desirable to adopt will depend to a very great extent upon the character of the water, and to a perhaps less extent upon the uses to which it is to be put. Suspended matter may be removed by plain sedimentation, coagulation, or roughing filters. Finer suspended matter not susceptible to economical removal by these methods can be removed by either mechanical or slow sand filters. Bacteria can be destroyed by hypochlorites, ozone, etc., or by sand filters; the water can be softened by plants adapted to that purpose; iron can be removed by oxidation and filtration, and in general any objectionable animal, vegetable or mineral substances can be removed or neutralized by physical, chemical or biological treatment.

While double or triple treatment of sewage and of water is now practically recognized as being in many cases not only the most effective, but the most economical also, apparently little has been done toward introducing multiple treatment in street cleaning, if we except the practice common in some cities of going over the business streets with a horse-drawn sweeper during the night and keeping the white wings busy throughout the day over much of the same area. Inventors are busy, however, with all sorts of mechanical devices for removing street dust and dirt. The horse-sweeper is objected to because it does not clean the dirt out of the joints between blocks, does not get down into holes and depressions in the pavement, etc. Pneumatic or suction machines which draw up into bags or other receptacles the dirt swept from the pavement would seem to be almost ideal, but they do not handle wet or damp dirt successfully, and most of those so far constructed have been heavy to draw and expensive both to construct and operate. Flushing gives clean streets, but is seriously objected to by the sewer department in many cities because of the amount of dirt washed into sewers.

The manufacturer of each appliance very naturally argues that his machine is the best under all circumstances. It suggests itself to us that here, also, multiple treatment may yet prove to be the most economical. If flushing machines do wash too much dirt into the sewers, let us confine their services to that in which they particularly excel—the removing of slime and of dirt from joints and depressions—and remove dry dirt and that upon the general surface of the pavement by means of the ordinary horse brooms or pneumatic sweepers. As these machines are at present designed this would apparently mean double expense, but if it were understood that each was to be confined to the services above suggested we believe that the cost and speed of operation might both be improved, and it certainly seems probable that the efficiency would be. This is a suggestion of but one combination of several which should be possible with known appliances and methods, and with the demand for others and a scientific study of conditions we do not doubt that new and improved ones will be devised.

LEOMINSTER WATER WORKS

REFERENCE has been made several times in these columns to the percentage of total water consumption which is used by cities for public purposes—and generally not paid for. This seems to run about 20 to 25 per cent of the total consumption, but the figures given are generally an approximation. In Leominster, Mass., some of this water is metered, the most important exception being that used for street sprinkling, although watering troughs, parks and cemeteries must use considerable quantities. The payments for water made to the department in 1909 were as follows:

Meter Rates	Schedule Rates
Schools.....\$458.29	Fire hydrants.....\$14,600.00
Fire department..... 34.95	Watering troughs..... 160.00
Fire alarm department... 189.14	Common and parks..... 147.00
Highway department,	Highway department
stone crusher..... 8.11	stable..... 10.50
Town Hall and other mu-	Cemeteries..... 75.50
nicipal buildings..... 166.81	Watering streets..... 200.00
Town farm..... 47.10	Town scales..... 9.00
Total municipal meters...\$904.40	Total municipal sched-
Other meter rates.....32,130.40	ule.....\$15,202.00
	Other schedule rates.. 12,278.65

It is seen by this that about 27 per cent of the income of the department from rates is paid by the town, although less than 4 per cent of this is from meter rates, while 72 per cent of the private rates are for metered supplies. Some of the schedule rates seem absurdly low if the amounts used (as for watering streets) are as great as in most towns. If we assume, however, that the schedule rates approximately represent the quantities consumed, and omit \$14,400 of the fire hydrant rate (leaving \$200 to cover water actually used), we find the rates for water actually consumed in public service to constitute but 3.7 per cent of the total consumption. The school consumption is seen to be a little over 1 per cent of the total private consumption—much lower than is the case in many cities.

The total income of the department was \$67,786.80, of which but \$7,586.58 went for maintenance expenditures; \$5,022.66 was for meters and service pipe (the cost of the latter being more than repaid by consumers in whose connections it was used); \$5,479 was for construction, and \$1,008.75 was for relaying pipe and improvements; the balance, or \$48,689.81, being turned into the general treasury. Of this, \$8,530 was paid as interest on bonds. During the thirty-six years of operation of the plant the income from rates and for public use has been \$1,092,022.75; the expenses of maintenance, \$110,877.35, and of interest \$362,081.34; \$394,210.19 has been used for construction purposes, and the general treasury has received a balance of \$296,326.08 over and above all expenditures and in addition to the water furnished for public use.

CINCINNATI WATER PURIFICATION

THE water purification plant of the Cincinnati water works was put into operation November 1, 1907, and was described in MUNICIPAL JOURNAL AND ENGINEER, November 4, 1908. The two reservoirs were both in service during 1909 for the first time. Reservoir No. 1 was drained and cleaned during the spring of that year, after more than two years of continuous service, this being the first opportunity for this because of the fact that reservoir No. 2 had not previously been available for use. The depth of mud was found to be from one to three feet and the total volume about 30,000 cubic yards. The cost of removal, including labor, power and water used for flushing, was \$899.43, or about 3 cts. per cubic yard.

After the second reservoir came into use a longer period of sedimentation was possible than could be secured in 1908, and the average turbidity of the settled water was reduced to 85 parts per million, as against 97 parts in 1908; the average turbidity of the raw water having been 225 in 1909 and 190 in 1908, showing a removal of 48.4 per cent of the turbidity by the single reservoir in 1908 and 62.2 per cent by the two reservoirs in 1909. The single reservoir in 1908 reduced the bacteria from an average of 7,000 to an average of 3,400, and the two reservoirs in 1909 effected a reduction from an average of 9,300 to an average of 2,500, giving 51.4 per cent removed by sedimentation in 1908 and 73.1 per cent in 1909.

The water from the sedimentation basins receives a charge of

sulphate of iron followed by one of caustic lime, as coagulants. During 1909 an average of 1.855 grains of sulphate of iron were added per million gallons of water, 0.836 of lime. The result of these was a further removal of turbidity in the coagulation basins equivalent to 27.6 per cent of the original turbidity of the river water. This left in the water as applied to the filters an average of 23 parts per million of suspended clay. There were three coagulation basins in service, and each was cleaned twice during the year, once in May and once in November. The cost of these six cleanings, including labor, power and water used, was \$168.42.

The crude river water contained an average of 9,300 bacteria and the water as applied to the filters contained an average of 475 bacteria per c.c., and the average number in the effluent was 75. Of the bacteria in the crude river water, 99.1 per cent were removed by the plant. Of the turbidity of the crude water, 10.2 per cent was removed by the filters.

The amount of water filtered in 1909 averaged 43,737,864 gallons per day. This was 269,512 gallons per day more than the average for 1908, and in addition to this, the use of a less amount of wash water reduced the amount of water used for that purpose by over 400,000 gallons per day.

In 1908 65.9 per cent of the carbonaceous matter in the organic impurities was removed, and in 1909 this was increased to 72.2 per cent; and 75.1 per cent of the nitrogenous matter was removed in 1909, as against 60.4 per cent in 1908.

The average length of run between washings in 1909 was 22.5 hours, the maximum being 30.5 and the minimum 14.97. The average time consumed in washing was 5.33 minutes, and the percentage of the total water filtered which was used for this purpose was 2.79.

Some difficulty had been experienced in 1908 with algæ and other growths in the clear water reservoir, and to avoid this the filtered water was carried through a by-pass around the clear water reservoir to the gravity tunnel, beginning May 19 of last year, any surplus water not immediately pumped flowing into the clear water reservoir. This plan enabled the Superintendent, Mr. Jos. W. Ellms, to furnish a clear water at all times.

The cost of operating the purification plant during the year was as follows:

Labor.....	\$24,346.46
Coal.....	2,743.63
Chemicals.....	29,333.86
Electric power and light.....	5,260.03
Supplies.....	2,766.20
Repairs.....	1,424.24
Advertising.....	23.70
Insurance, rent and taxes.....	124.50
Transportation.....	39.55
Wash water (at \$3.75 per million gallons).....	1,664.58
Water used, lost and wasted.....	411.76

Total.....\$68,138.51
The amount of coal used was 1,268.89 tons. Of chemicals, 2,123.35 tons of sulphate of iron and 959.3 tons of lime were used.

This gives average costs per million gallons of \$1.83 for chemicals and \$4.26 as the total cost of coagulation and filtering. Mr. Ellms points out as evidence of the results obtained by filtration that the number of deaths from typhoid fever have been reduced from an average of 53 per 100,000 population for the three years preceding the introduction of filtered water to 13 per 100,000 in 1909.

NUISANCES FROM CREMATORIES

THE New York State Legislature recently passed a bill which was signed by the Governor, which aims to prevent the creation of nuisance by garbage crematories in that State. It applies to crematories for treating garbage, offal, dead animals and fish located within ten miles of the corporate limits of any city, and provides that such appliances and methods must be used as will prevent offensive and obnoxious gases and fumes. A private corporation or municipality creating, allowing or permitting such nuisance is guilty of a misdemeanor and may be punished by a fine of not less than \$100 nor more than \$250 for each day that the odors are permitted to exist, or by imprisonment for not more than one year, or both. This law is to go into effect September 1st of this year.

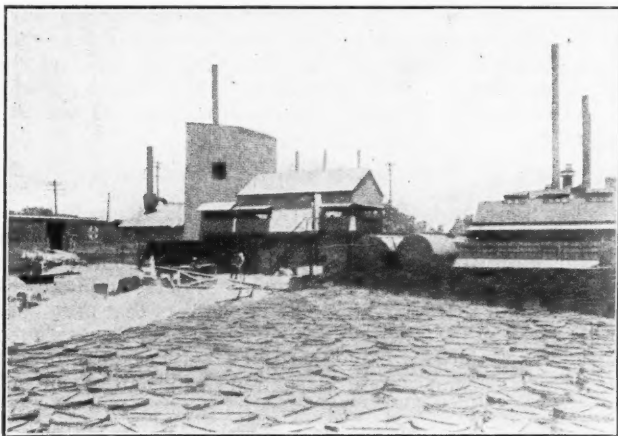
NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

ROADS AND PAVEMENTS

Denver's Asphalt Plant Ready for Work

Denver, Col.—Denver's municipal asphalt plant is practically finished and will begin to turn out paving material August 1. The plant cost \$7,500 for the site and \$17,150 for the building and machinery. S. R. Murray, formerly superintendent of the Indianapolis municipal plant, supervised the



NEW MUNICIPAL ASPHALT PLANT, DENVER

construction and will have charge of the operation. The plant is fortunately situated so far as obtaining low cost sand is concerned—it may be had merely for the cost of hauling. The asphalt to be used will come from California. In the same yard are storage tanks and loading apparatus for oil which will be used on macadam roads.

Auto Club Protest on Plank Road Paving

Jersey City, N. J.—Protest against the proposed paving of the Plank Road connecting Jersey City and Newark entirely with Belgian blocks has been made to the Board of Freeholders by letter by Melville A. Carpenter, on behalf of the New Jersey Automobile and Motor Club. Mr. Carpenter's letter will be considered by the county officials. Besides his own letter, Mr. Carpenter, who is chairman of the club's roads committee, forwarded a communication he received from Clarence H. Bissell, president of the organization, on the subject. In enclosing Mr. Bissell's letter Mr. Carpenter wrote that personal talk with many automobilists had shown that sentiment favored using part of the thoroughfare for a highway for light vehicles. Mr. Carpenter added that for the heavy trucking the Belgian blocks were the paving required, and urged the Board to provide for a division of the roadway so that the needs of light vehicles would be cared for by a smooth paving and heavy truckage given the kind of paving it needs. Mr. Bissell wrote that Belgian block paving will not meet the requirements of all classes of vehicles. Concerning the plan of making a center driveway, Mr. Bissell said that it is obvious, a single roadway will not furnish the traffic facilities that a boulevard with a center driveway will give. He added that every club trustee and official with whom he had talked favored the plan to divide the thoroughfare into three roadways. Under this arrangement it is proposed to pave the outside highways with Belgian block for heavy trucking and install wood block on the center space. Curbs would separate the roadways.

New Concrete Bridges

Philadelphia, Pa.—The city of Philadelphia is one of the most extensive users of concrete in the world. It possesses, either completed or in course of construction, 54 concrete bridges. These bridges have spans varying from 25 to 233 feet.

Best Roads at Least Cost

Montgomery, N. Y.—State District Supervisor of Highways E. B. Patton highly complimented Town Superintendent of Highways J. Henry Whitmarsh after a recent inspection of the 113 miles of roads in the Town of Montgomery. He stated that out of the 119 towns that he had inspected he found the roads in the Town of Montgomery the cleanest and freest of stones and best lined, and crowned of any of them and also stated that Mr. Whitmarsh had the least money of any of the Highway Superintendents to do the work with, although the town is the second largest in the county. Mr. Patton directed Town Clerk George Birch to report to the Town Board that in company with Mr. Whitmarsh he had inspected the highways in the town and that they were in the best condition of any town in the county and that he recommended that for next year the town raise \$1,000 additional for the general fund.

Many Streets Oiled

Muncie, Ind.—A number of the streets in the western part of the city will be oiled as soon as the work, which was stopped owing to the lack of material, is resumed. Members of the Board of Works expect that the work will continue for some time, since there is an unusual demand for the oil which has been spread over the streets. Muncie now has more than three miles of streets oiled, and the demand is growing.

Plea for Wider Tires

Omaha, Neb.—Realizing that some greater protection should be given pavements a special committee has been appointed to draw up an ordinance regulating the width of tires on all vehicles, more especially on heavy drays, which up to the present time have been cutting into pavements and shortening their period of usefulness several years. Drays are now constructed to carry twice the tonnage of a few years ago, but there has not been a corresponding increase in the width of tires.

Free Bridges at Last for Pittsburg

Pittsburg, Pa.—Greater Pittsburg is at last to have free bridges. This was finally settled at a meeting between County Commissioners I. K. Campbell, J. Denny O'Neil and S. J. Toole, Mayor W. A. Magee and a body of representative citizens and property owners of the Northside, among whom were Henry Buhl, George B. Logan, Samuel W. Black, Edward G. Lang, Stephen G. Porter and Attorney James Balph. After a prolonged conference it was decided to instruct City Solicitor C. A. O'Brien to prepare a petition in condemnation with the assistance of County Solicitor A. B. Hay, to present to court, asking for viewers, the court to fix the amount of the bond. The city will then immediately take over the Seventh street bridge and free it at once to the people, pending the report of viewers and the litigation that will most surely follow. In event of an injunction the city may be restrained from taking possession, but the City and County Solicitors can see no way in which it can be secured under the law giving the city and county the right to condemn bridges in cities in the commonwealth.

Crude Oil Makes Thoroughfares Soggy

Sacramento, Cal.—These hot days are playing havoc with Sacramento County's new roads, built under a \$600,000 bond issue, because throughout the county the hot crude oil makes the thoroughfares soggy. Farmers with loaded wagons find the soft soil too gummy for travel, so are compelled to use side ditches. Automobiles with thick pneumatic tires sink deep into the oil. It is expected that Sacramento County, being one of the pioneers at oil road work in this part of the State, did not study the conditions thoroughly enough in mixing the gravel with oil. Many complaints are being heard from the automobilists going through this county because they pick up such great quantities of oil.

Street Pavement Bulges

San Antonio, Tex.—About 2:15 o'clock in the afternoon one day last week a section of the brick pavement, 10 x 10 feet in area, suddenly and without warning warped up in a wedge-shaped elevation, in much the same manner as boards in a parquette floor are accustomed to do when expanded by dampness. Several persons in the neighborhood saw the upheaval. They report there was no sound, save for the cracking and grinding noise of moving brick; neither was there a jar or similar disturbance noted. The supposition is that the expansion of the brick and intervening cement by the heat of the midday sunshine caused the upheaval. Sidewalks have been known to swell up and distort themselves because of the heat, but never before in San Antonio has the brick pavement risen up in a rigid mass because of torrid rays from a summer sun.

Discuss Seven Plans to Abolish Grade Crossings

Syracuse, N. Y.—City Engineer Henry C. Allen and Chief Engineer George W. Kittredge, of the New York Central Railroad, at a recent conference considered seven different plans looking toward the elimination of grade crossings. Some of these looked toward elevated tracks by the West Shore route, which proposed new passenger stations, tentatively located at different points, including the old West Shore station site. Another plan is understood to have been for skirting the city by an elevated route crossing the salt lands in the northern section of the city. The frequently suggested plan for the electrification of the present New York Central tracks through Washington street for inter-urban trolley service from the East was gone over.

Spokane Improvements

Spokane, Wash.—Contracts aggregating \$918,376 for civic improvements in residential districts in Spokane were awarded by Mayor Nelson S. Pratt and the Board of Public Works last week, making a total of \$3,100,000 since the beginning of the year. The J. F. Hill Company of Chicago, now at work in Browne's Addition upon the largest single contracts for paving ever awarded in the Pacific Northwest, amounting to \$512,000, will also do paving work involving an expenditure of \$438,171 on Cannon Hill, a residential district in the southern part of Spokane, and expects to begin on a contract amounting to \$420,205 within 30 days. Mayor Pratt says the city of Spokane will do more than \$6,000,000 worth of work on streets and bridges this year, adding that the City Engineering Department is preparing plans and estimates for work in 1911 that will cost between \$7,000,000 and \$8,000,000. Building operations also are keeping pace and it is believed that the total expenditure in these lines will reach \$9,000,000 this year, as against \$8,750,000 in 1909, the best season in the history of the city.

First Oiling of Roads with New Distributor

Willimantic, Conn.—According to a letter from Highway Commissioner MacDonald to the Selectmen, the roads in the vicinity of Willimantic will soon be treated with oil. A tank car of oil is on the way, as well as an oil distributor from the Studebaker Company, of South Bend, Ind.

SEWERAGE AND SANITATION

Passaic Sewer Agreement to Be Submitted Soon

Newark, N. J.—Municipalities interested in the Passaic Valley sewer project will be asked to sign contracts with the commission within a week or two. As soon as that is done the specifications for the work will be drawn up and contracts for work probably made in the fall.

Operation of New Britain Sewer Beds

New Britain, Conn.—State Chemist J. A. Newlands has recently made a report on the working of the sewer beds in which he states that during the month of June the sewage has been run directly on the beds without passing through the septic tanks. It has been found that there is much less odor from the beds when this plan is followed out. This course will be continued during the hot weather. It has been found that the presence of iron from the factories is almost entirely in the afternoon. In order to take care of this iron the sewage is allowed to run over six acres instead of three from 1 to 8 o'clock p. m.

Milk Supply Dirty

Chicago, Ill.—The milk of Chicago is the dirtiest in the world. This startling fact, vital to the health of 2,500,000 people, was made public last week by the Milk Commission recently appointed by Mayor Busse, in its first preliminary report to the City Council. The Commission, after going over the situation carefully, has arrived at the conclusion that nothing is to be gained by concealing the facts, and that the only way in which conditions can be remedied is to face the truth and begin all along the line. It was careful to impute no blame to the City Health Department, which its report says has done wonders with a staff that is undermanned and underpaid. The milk supply of Chicago amounts to 240,000 gallons daily. The Commission will continue its investigations.

Oiling Creeks Begun by City Health Department

Dallas, Tex.—The City Health Department began oiling the various branches or small creeks that run through the city and the work will be continued until all such streams have been treated. The oil being used is intended not only to deodorize but to destroy mosquitoes hatched on such waters.

Clean Milk Crusade Results in Famine

Logansport, Ind.—The City Board of Health has made it so hot for milk dealers that thirteen have quit business during the month, and Logansport is now threatened with a milk famine. There are only twelve dealers supplying the city now, and there are hundreds of families that are unable to get fresh milk. Grocers are having a rush on condensed milk. When the new City Board of Health went into office January 1 it began a rigid inspection of all dairies, all milk wagons and cans, and conducted milk tests two or three times a month. Dairies were ordered cleaned, milk cans scoured and wagons washed. Milkmen whose milk was below the standard butter fat were prosecuted and all were compelled to live up to the strict letter of the law.

New York Opens Tuberculosis Clinics in Italian Quarters

New York, N. Y.—Dr. Walter Bense, City Sanitary Superintendent, last week told of the Board of Health's extensive plans to stamp out tuberculosis, particularly among the Italians, who have been shown among all aliens to be most subject to the disease. To direct the Board's efforts more effectively, he said, a three-story building at 339 East 109th street, in the heart of "Little Italy," has been leased, and opened as a tuberculosis clinic. Two physicians are in charge. Dr. Bense said that another clinic had been opened in the downtown Italian district. In this work among the Italians the Board of Health has the active co-operation of the society organized by prominent Italian citizens and headed by ex-Ambassador to Italy Lloyd C. Griscom, for the purpose of battling with the disease among Italians here. Dr. Bense spoke also of the enlargement of general plans for fighting tuberculosis. In addition to the ferryboat clinic in the East River, at the foot of East Ninety-second street, and the clinic at headquarters, Sixth avenue and Fifty-fifth street, the Board of Health maintains a large branch at 426 First avenue. Another clinic is to be opened shortly in West Thirty-fourth street, which is to take the place of the headquarters clinic, then to be closed. The branch in First avenue will eventually become the general application bureau for all tuberculosis patients.

Board of Health Drafts Amended Meat Ordinance

San Francisco, Cal.—The Board of Health has returned to the Board of Supervisors its amended draft of the proposed meat ordinance. In all substantial and material requirements it is in the same form as the one several times argued before the Hospital and Health Committee of the Supervisors, except that a provision is inserted recognizing the stamps and brands of other California Boards of Health, "whose meat inspection standard is equal to and recognized by the San Francisco Board of Health," or whose meats bear "the meat inspection brand of the United States Department of Agriculture." To carry out the provisions of the ordinance twelve additional inspectors are asked for, each to draw a salary of \$125 a month, or a total of \$15,000 a month.

WATER SUPPLY

Chamber of Commerce Advises Prompt Action

Akron, O.—The Chamber of Commerce has recommended to Council that if the city can purchase the old plant of the Akron Water Works Company for a figure not to exceed \$750,000, it might be well to buy the plant. The price set on the plant by the Akron Water Works Company is \$1,150,000. If the plant cannot be purchased for \$750,000 the Chamber of Commerce suggests that the city then secure the services of a competent engineer and have plans prepared and estimates made of an entirely new plant to be owned and operated by the city. After an estimate has been made of the cost of a new plant the Chamber of Commerce has recommended to Council that the question of a municipal plant be submitted to a vote of the people. The Chamber of Commerce has suggested to Council that good water and in sufficient supply might be secured from drilled wells. Whatever is done on the water question the Chamber of Commerce has recommended to Council that quick action be taken.

Albany Water Supply Is Good

Albany, N. Y.—The committee appointed by the Albany Chamber of Commerce to investigate the water supply has just made its report and finds that the city supply is excellent. Ninety per cent of the water used is filtered, and according to the analysis of Dr. William P. Mason of the Rensselaer Polytechnic Institute was excellent. The report stated that 197 gallons a day per capita were being used.

Wisconsin Commission Suspends Ordinance

Beloit, Wis.—Evidence was presented by the city and by the Beloit Water, Gas and Electric Company before the State Rate Commission in the hearing pursuant to an appeal by the Utilities Company of an ordinance recently passed by the Common Council, ordering the company to lay 425 feet of water main extension on Vernon avenue west from the present mains. The causes for the passage of the ordinance were presented by the city and evidence purporting to show that revenue from the proposed main would not sufficiently warrant the investment, was offered by the company. The testimony showed that both the city and the Beloit Water, Gas and Electric Company had made a canvass of owners whose property abuts on the street where the main is ordered, but there was a slight difference in figures relating to the revenue possible from the proposed extension. The Commission has taken the case under advisement and will render a decision later. Since the ordinance imposes a penalty if the work be not commenced within ten days, and be not completed within twenty days from date of passage, the Commission issued an order making the ordinance ineffective until it shall have rendered a decision.

Dallas Officials Will Test Meters

Dallas, Tex.—For the purpose of subjecting water meters to a more rigid test than they have undergone thus far City Meter Inspector Taylor is preparing to put a large number of various makes of meters in actual service in Dallas. He estimates that he will use at least ten meters from each manufacturer who is competing in the Dallas market. Taylor has already notified the concrete and cement contractors that he will put meters on the water supply pipes used on their jobs. He says these men have been using a great amount of water at the flat rate and he proposes to put them on the meter basis to determine just how much they use and make them pay accordingly. The rate they will be charged has not been determined, but it will be high enough to permit profits with which to lay pipes and enhance land values.

Dallas' New Reservoir Filled

Dallas, Tex.—The new Bachman reservoir has been filled. It is expected that some pumping will continue, even if no water is drawn off, as there is considerable seepage under the big dam. It is the hope of the Water Department management that the silt pumped from Elm Fork of the Trinity into the big reservoir will in time sift into the gravel beds and stop the seepage.

Work Planned by Water Supply Commission

Albany, N. Y.—The State Water Supply Commission met last week to outline important work for the coming season, and Robert W. Fuller, former private secretary to Governor Hughes, took his seat as a member of the Commission for the first time. The plans include the completion of the surveys on the Genesee River, as the sale of bonds recently for the improvement of the Canaseraga Creek insures the speedy completion of this work. The creek is a branch of the Genesee River. Outlined work for the summer will include a continuation of the surveys and investigations for water storage and power development along the Black River and on the Seneca and Oswego rivers. Investigations of the possibilities for small water power developments for farm use and for the use of water for irrigation purposes within the State of New York. This work was first begun this year. The Commission approved the application of the Belfast water district for a new source of water supply. Work will be continued in gauging the flow of streams and recording rainfall in various localities in co-operation with the Federal Government.

Well Water Contaminated; City Water Pure

Dayton, O.—The presence of colon bacilli in almost every sample of well water submitted recently to City Bacteriologist Rupert K. Welliver, prompted Dr. Welliver to advise the citizens of Dayton to discontinue the use of their well water during the summer months. The city water is entirely free from this germ.

Distribution System in Bad Shape

Fort Wayne, Ind.—The Board of Works purposes fitting the entire distribution system with stop cocks, so that repairs to leaks, of which many have been discovered recently, may be made without shutting off water from the entire city, as now has to be done.

Fears Contamination from Manufactural Wastes

Gary, Ind.—As a result of agitation in the Calumet region for purer drinking water, Dr. W. S. Faulds, President of the Gary Health Board, is concerned over the sewage disposal of the various industrial plants coming to the cities around Gary. J. H. Brewster, of Indianapolis, will make an investigation there as well as at Hammond. Through the system will also flow sulphate salts, it is said, and other chemicals used in a tinplate plant. The proposed outlet of the sewers will be 7,000 feet from the water intake where water is pumped to the citizens of Gary. Mayor Motts, of Gary, is opposed to the plant.

Great Output Prevents Complete Purification

Lawrence, Kan.—The yellow appearance of the water, about which there has been some complaint, is explained by Manager Sauer, of the Water Works Company, to be due to the presence of iron. The consumption is so large—1,500,000 gallons per day—that the purification plant cannot remove all the iron.

Water Lake Beneath City

Oklahoma City, Okla.—According to Harry G. Daly, expert well digger, Oklahoma City is located above a wide and inexhaustible underground lake. The lake is at a depth of from 30 to 100 feet, and is in the midst of sandstone and gravel formations. Daly for the last several months has been supervising the digging and installation of seven huge wells for the Morris Company near Packingtown and is now engaged on three additional for the Oklahoma Gas and Electric Company. His statements are positive that the seven wells will supply the big demand for water of the Morris Company, and that the city is in no danger of a water famine with an underground lake at no greater depth than his recent discovery indicates.

Locating Leaks in Submarine Mains

Perth Amboy, N. J.—Tests made by the Pitometer Company show that between 350,000 and 500,000 gallons of water escape from the two mains bringing water under the Raritan River in a day. The mains will be repaired by the Merritt-Chapman Wrecking Company. To locate the leaks the mains will be emptied and air forced in; the bubbles coming to the surface will locate the breaks.

Water Department to Build Manholes

New Britain, Conn.—The Water Department has decided to safeguard the permanent pavement by using a new method to get at the gates or valves in the water mains throughout the paved area. They will install manholes instead of the small gate boxes now in use. At present there is a small wooden box extending from the surface of the street down to the gate or valve in the main, and when repairs are necessary the Department is obliged to dig up the box and make an opening sufficiently large to allow a workman to get down to the gate. This would cut up the permanent paving a great deal and the Commissioners have decided to have manholes instead. A hole large enough to enable a man to get in and repair the gate will be made, and it will be protected by a cast iron manhole cover. There will be twenty-four of these manholes in the permanent pavement district.

Can Buy Louisville Water

Louisville, Ky.—Attorney-General Breathitt has formally given the Board of Control an opinion in which he held that the Board had a right to contract with the Water Works Company of Louisville to furnish water to Lakeland Asylum. The Attorney-General held, however, that if any citizen of Louisville could prove that the supply of water was being decreased to such an extent that it was insufficient for the needs of the residents of that city, then he could enjoin the water company in a court of equity from supplying the water.

Sudden Water Famine

Ogden, Utah.—Without warning, Ogden experienced a water famine July 10, which for a time threatened to assume serious proportions. The day before announcement was made by the Water Works Department that the supply would be cut off at 10 o'clock at night, and a goodly reserve supply was drawn from the taps in most households. The cause of the shutoff was the changing of the feed pipes from the old to the new reservoir. Early in the morning the supply was again turned into the pipes, and consumers ceased to hold their reserve supply, when suddenly, without any warning whatever, the water supply was again cut off, and the entire city sweltered through one of the hottest afternoons of the summer, many citizens having not even drinking water at hand. Lack of sufficient pipe to make the proposed change is said to have been responsible for the trouble. The gang of workmen engaged to make the change discovered a deficiency of 18 inches in one of the pipes, and the work was abandoned for the night, and the water turned back into the pipes from the old reservoir. At noon the necessary pipe was secured, and the work was again undertaken, this time without warning to the public.

Purity of Water Questioned

Rensselaer, N. Y.—Although Rensselaer city water is pronounced as being pure, a resident on Broadway drew a good-sized lizard from his faucet while drawing a glass of water for drinking purposes. The lizard was well developed. It is also said that boys are permitted to swim in the storage reservoir on Dunn's Hill, just east of the city. The officials of the water company will be asked to see that this practice is stopped immediately.

Rights of Community Above Technical Corporation Rights

Allentown, Pa.—Judge Trexler has given a decision denying the application of the Clear Springs Water Company for an injunction to restrain the borough of Catauqua from laying water mains in newly-annexed territory. The company claimed a monopoly of the right to supply water in this territory. Judge Trexler said he has no respect for technical claims to any monopoly by the plaintiff company, and denies the rights of township supervisors to grant exclusive privileges to a private water corporation. In short, he sweeps aside all claims of the private water company to any rights whatsoever as distinguished from the power of the municipality, and ridicules any claim of the supervisors that they had to grant a monopoly.

STREET LIGHTING AND POWER

Minimum Service Charge for Electricity

Albany, N. Y.—The Municipal Gas Company has served notice on its consumers of electricity for lighting purposes that beginning July 1 "a minimum service charge of \$1 per month will be made on all installations." The rule has raised the question of whether or not this charge is a violation of the law of 1907, which restricts the company to a charge of not more than 10 cents per kilowatt hour. The new ruling will affect many consumers, especially those who leave the city during the summer. If no current is used at all by customers the charge will be \$1 a month. The effect in many instances will be to make the charge more than the maximum allowed by the law if it be construed as a charge for electric current. The law places a penalty of \$1,000 for each overcharge. It is probable the Public Service Commission will be called upon for a ruling on the question involved. In other cities of the State the Commission has not regarded a service charge as unreasonable, but on account of the special law in reference to Albany a legal construction as to power to make a service charge will be necessary.

Delighted with New Boardwalk Lights

Cape May, N. J.—The new arches upon the Boardwalk were used last week for the first time, and surpassed every expectation. They brilliantly light every portion of the walk and make it a delightful evening promenade. The arches are placed at distances of 60 feet for the whole length of the Boardwalk and between each two there is a column upon which is placed a powerful tungsten electric light to supplement the arches. Everybody is delighted with the new mode of lighting.

Electrical Ordinance Passed

Cedar Rapids, Ia.—The new electrical ordinance has passed the City Council. The following are the principal provisions:

Approved metallic conduits shall be used for enclosing all concealed electric light or power wiring in new buildings, the rewiring of old buildings and in new installations in old buildings or additions thereto located within the district known as the fire limits.

All wiring for electric light or power hereafter installed in churches, theaters and other places used for public gatherings in the city of Cedar Rapids shall be installed in suitable approved metallic conduits and all such wires thereafter installed in unfinished basements in old buildings other than dwellings designed for the occupancy of not more than three families, shall be likewise placed in similar conduits.

Better Lights for Omaha

Omaha, Neb.—Omaha street lighting needs vigorous attention, according to the Municipal Affairs Committee of the Commercial Club, which held a meeting to discuss this and other topics. It was agreed that Omaha will find itself behind the times in respect to street lighting unless something is done promptly. On the other hand, the committee declares that an unfortunate situation exists on account of the lack of a franchise by the Omaha Electric Light and Power Company and the lack of legislative authority to establish lighting districts. But in spite of this plans have been outlined to make the city one of the best illuminated in the country, and while this will not be achieved in a day, a step forward has been taken in the appointment of a special committee to confer with the electric light company with regard to the immediate installation of the most ornamental standard made on a section of Sixteenth street four blocks long. W. D. Williams, G. W. Craig and J. L. Kennedy are the members of this committee.

Provo Will Compete with Electric Plant

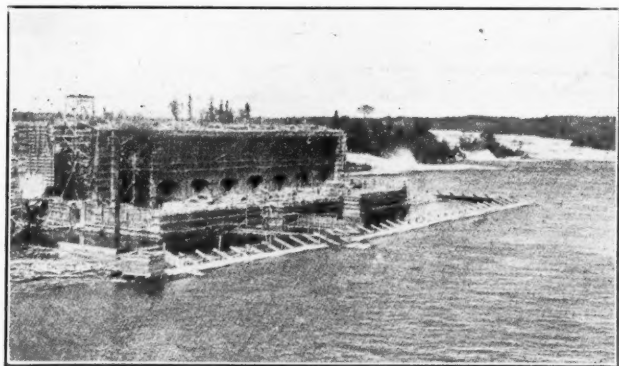
Provo, Utah.—Chairman John E. Bott, of the City Council Electric Light Committee, has received an offer from the Provo Electric Company for its distributing plant in this city. The price asked is \$100,000. As the bond issue voted on for the electric plant is only \$110,000, it will be seen that the city cannot buy the distributing plant of the electric company, as that would leave the city only \$10,000 for building a power plant. Therefore, if the city decides to establish a municipal lighting plant, it will have to be operated in competition with the electric company.

Special Illumination for a Syracuse Street

Syracuse, N. Y.—The work of installing special illumination in South Warren street, between East Fayette and East Jefferson streets, has been started, and General Manager James C. De Long, of the Syracuse Lighting Company, said that efforts would be made to complete the installation by August 15. Posts similar to that now in front of the Lighting Company's office will be erected at the curb line at equal distances on both sides of the street. They are about nine feet high, and are surmounted by five large incandescent lamps. The posts will be exactly opposite each other, so as to make the arrangement harmonious. When in service the block will be the most brilliantly illuminated spot in the city. A number of large electric signs in the street will add to the brilliancy. The plan for furnishing special illumination was presented to the business interests of the street last fall, but it was not until recently that final arrangements for the experiment were completed. The installation is made on the basis of being continued two years.

Winnipeg's Hydro-Electric Development

Winnipeg, Canada.—Winnipeg's big hydro-electric power plant on the Winnipeg River at Point Du Bois, 77 miles from the city, will be completed and ready for operation in June, 1911. Twenty thousand horsepower machinery is now being installed in five units. The cost of power at



WINNIPEG HYDRO-ELECTRIC POWER HOUSE

Winnipeg will be \$18 per horsepower per annum. There have already been excavated 88,000 tons of rock and 25,000 cubic yards of concrete have been laid. Ultimately 60,000 horsepower will be developed. The waterfall, naturally 32 feet, is increased by dams to 47 feet.

Palo Alto Light Plant Finished

Palo Alto, Cal.—The lighting system which has been in course of construction for over a year, has been completed. It is believed to be the best of any of the lighting plants on the peninsula.

FIRE AND POLICE

Police Chief Only Department Head Praised by Commission

Chicago, Ill.—Chief of Police Leroy Steward is given extensive praise in the report of the Merriam Commission, appointed some time ago by the City Council to investigate the various departments of the City Government. So far Chief Steward is the only department head who has been commended by the Commission, which has submitted a partial report. In addition to the Chief, Secretary Si Mayer, who for 12 years has handled the business end of the Police Department, is lauded for his efficiency. While the Chief is given praise, there is some criticism of the many men who are holding "soft" berths instead of traveling beats. Even in this, however, the report says that the Chief gradually is eradicating these. About 30 sinecures were found to be held by patrolmen, among them being men working as painters, carpenters, stenographers, and in other positions.

To Place Cut-Off Valves on Hydrants

Pomona, Cal.—Among important improvements to the department which will be made in the near future will be the placing of cut-off valves in the two outlets in each fire hydrant, so that a second line of hose may be laid without cutting off the stream already in use.

Parks Under Police Board

Kansas City, Mo.—On August 1 the Police Department will assume the responsibility of policing the parks and boulevards of the city, in accordance with the offer of the Police Commissioner to the Park Board, of which D. J. Haff is President. The members of the park police force, of whom there are about 25, will be notified to make application to the Police Board for positions as patrolmen. They will take the ordinary examination given by the Department and will not have to take the Civil Service examination, which would be their lot if the Park Board should retain the policing responsibility. The police assigned to park duty will be subject to the orders of the Superintendent of Parks and other officials of the Park Board.

Economies in Fire Department

New York, N. Y.—Commissioner Waldo of the Fire Department has reported to Mayor Gaynor that in the first six months of his administration \$147,270.11 less was spent for repairs and supplies than in the corresponding period in 1909. The amount spent in the period this year was \$412,636.64. Since the first of the year thirty-one uniformed men who had been detailed in clerical or administrative capacities were sent back to regular duty, in the suburban districts largely, where men are needed. The services of fourteen civilian employees have been dispensed with altogether. The salaries of these forty-five men amounted to \$65,904.50 a year. Commissioner Waldo reports that since the first of the year all promotions and appointments have been made in the order in which the names were certified by the Civil Service Commission.

Fire Engine Tests by Underwriters

Pueblo, Col.—Steam in Engine 1 was secured in four minutes from the time the signal was given, and a full pressure was maintained in 13 minutes from that time. The first test was of 12 minutes duration, during which the engine maintained its rating of 1,000 gallons per minute. The second test of nine minutes showed it to be capable of throwing 1,100 gallons per minute without endangering the machinery. The pressure at the end of the nozzle was 90 pounds in the first test and 110 pounds in the second. Bessemer was then visited, and Engine 2 given its test. The figures show that the old engine failed to secure its rated capacity of 600 gallons per minute, and that it was barely able to maintain 440 gallons, which is about three-fourths of the rated capacity. The valve tests were unsatisfactory, showing a considerable leakage at vital points. According to Mr. Canada, the engine was in as good shape as it is possible to make it under the circumstances, and the failure is attributed to nothing but age and hard usage.

Begin Work on Training Tower

Rochester, N. Y.—The work of laying the foundation for the training tower at the training school for firemen on Genesee street was begun last week. It will be completed in a few days and then the steel tower, which is 70 feet in height, will be put up. The tower is complete in sections and ready for erection, so that the work will not take very long after the foundation has been completed. As soon as the tower has been completed the training school plans will be started, and it is expected that the school will be in full operation about August 1.

Fire Auto Damaged; Returned to Factory

Texarkana, Ark.—A displacement of the front axle and the bending of the frame of the machine, said to be due to the carelessness of Dick Schug, demonstrator for the Robinson Fire Apparatus Manufacturing Company, caused Chief J. J. Hussey, of the Joint Fire Department, to return the new automobile fire truck in service in Texarkana for the past 12 days to the factory to be equipped with a heavier frame, double trusses and heavier springs that will stand the jars of the Texarkana streets. The repairing of this car means the saving of several hundred dollars to the Arkansas taxpayers in that the car was given a thorough test while the property of the manufacturers, and when it will be finally turned over to the city it will be absolutely perfect and will contain every mechanical improvement necessary for running to fires over Texarkana streets.

GOVERNMENT AND FINANCE

El Reno for Commission Form

El Reno, Okla.—Little interest was manifested in the election on the commission form of government July 14, only 477 votes being polled. Of these 359 favored the commission form and 118 were opposed.

Lawrence, Mass., Has Two Mayors

Lawrence, Mass.—City officers are in a quandary as to who is the legal Mayor and from whom they shall take orders. Mayor White still contends that he is qualified to fulfill the duties of his office even though he is serving a jail sentence for alleged conspiracy to bribe, while Thomas R. Jordan, President of the Board of Aldermen, claims that he is the acting Mayor. As a result there is a conflict of authority. The Mayor conferred with several city officials in the jail and signed a paving contract with a local contractor, besides approving the contractor's bonds. Acting Mayor Jordan occupied the Mayor's office and summoned the heads of the departments to him and gave orders regarding different matters in connection with city affairs. The City Solicitor has not yet given an opinion as to whether White can still act as Mayor, and until he does, much confusion is expected.

Advertise for Mayor

Berlin, Ger.—Following the German theory that the best way to fill a municipal office is to hire the best available expert in the particular line of work to be done, the city of Magdeburg, by the President of its Council, is advertising conspicuously in prominent German newspapers:

The place of Mayor of Magdeburg is vacant. The salary is 21,000 marks (\$5,250) a year, including the rental of a dwelling in the City Hall. Besides the salary the incumbent will receive 4,000 marks (\$1,000) for his official expenses. Candidates should apply before September 1.

The Magdeburg case attracts special attention, as it is the first large city to advertise in filling so important an office. The retiring Mayor, Dr. Lentz, was lately promoted to be Prussian Minister of Finance.

Village Government Lax, Says Comptroller

Scotia, N. Y.—State Comptroller Clark Williams has filed the report of the examiners from his department into the affairs of the village of Scotia and the report is replete with criticisms of the methods of doing business in the village across the river. In his report, Mr. Williams states that Scotia is the most expensive village of her size in the State and officials of the village have been very lax in their duty. Attention is called to a large number of instances which are cited by Mr. Williams.

Councils Move to Solve City Snarl

Wilmington, Del.—A resolution was adopted by the Democratic majority of the City Council instructing Mayor Spruance, who is a Democrat, to request Governor Pennell, a Republican, to call a special session of the General Assembly at Dover to adopt legislation whereby the present invalid government of the city can be made valid. The Republican minority of Council voted in the negative.

Commission Fails to Make Detailed Report

Tacoma, Wash.—Students of the Commission plan city charter are still wondering what has become of the monthly statements supposed to be issued by the commission showing the receipts and expenditures of the city by departments and a summary of the commission's proceedings for the preceding month. Several days ago the commission instructed City Clerk W. H. Cushman to prepare such a report. Mr. Cushman says he has not prepared the statement. Asked if he intended to he said he would see about it. He said he understood the commission intended to publish the reports of the various departments. Followers of the charter say the monthly statement provision requires more than the mere publication of departmental reports. Sec. 22, article III, says: "The Council shall cause to be printed each month in pamphlet form a statement of all receipts and expenditures of the city by departments and a summary of its proceedings during the preceding month, and furnish printed copies thereof to the public library, the daily newspapers of the city and persons who shall apply therefor at the offices of the City Clerk."

STREET CLEANING AND REFUSE DISPOSAL

Columbus Garbage Disposal Plant in Operation

Columbus, O.—The garbage reduction plant, the first in the United States to be built wholly new and operated by a city, has been placed in service. The city wagons take the garbage to a point on Mound street at the canal, from where the Hocking Valley railroad then convey the refuse to the new plant about a mile and a half south of the corporation line. The capacity of the new plant will be 80 tons daily. The present output of the city is 40 tons, which will be increased within the next few weeks because of annexation and the season to about 60 tons. The plant when in full swing will employ about 20 men. There was no formal opening of the big plant, but it was simply started to work.

Object to Garbage Transfer

St. Paul, Minn.—Garbage collectors transferring their loads from city wagons to farmers' wagons at Snelling and Langford avenues have attracted the attention of the State Board of Health. One of the members said he had frequently noticed that garbage was being loaded from one wagon to another at this point. He said it caused an abundance of bad odors, that some of the garbage was spilled and that as a whole the transfer of garbage at this point is a nuisance. The place is the transfer point of the Snelling avenue and the Como-Harrier lines, and it is one of the entrances to the State fair grounds. The Board passed a resolution to have the matter taken up with the proper authorities to get the nuisance abated.

Using Common Salt in Sprinkling Wagon

Saco, Me.—Contractor Milliken is trying an experiment in Saco in the matter of laying dust which has so far given good results. The experiment consists in using salt water for sprinkling and the salt water is obtained by suspending a bag of salt in the sprinkler tank, where it is quickly dissolved. The results obtained on Elm street have been very good indeed, as the dust has been held well by the solution.

RAPID TRANSIT

Cincinnati-Pittsburg Trolley Line

Cincinnati, O.—The Cincinnati and Pittsburg Electric Railway Company chartered at Wilmington, Del., has, according to the statement of one of its promoters, A. E. Cox, the purpose of building a through line a distance of 466 miles from Cincinnati to Pittsburg. It is stated that the line will follow the Ohio River on the Ohio side and that the Edison storage battery and electric system will be adopted.

Three-Cent Fare Cause Loss

Cleveland, O.—A deficit of \$78,828 is declared by the Cleveland Street Railway Company, after four months' operation under the three-cent fare rule. The report of the company for the month of June shows a deficit of \$48,927. The directors passed a resolution to borrow \$250,000 to meet pressing obligations. The railway system was lifted out of a two-year receivership on March 1 and handed back to the original company to be operated on a three-cent fare basis. A profit was shown on the first month, but since then there has been a steadily growing deficit.

Council to Consider Street Car Fenders

Spokane, Wash.—Mayor Pratt has referred to the City Council information concerning a new street car fender invented by C. B. Martin, of Portland, and indorsed by the City Council of that city for street cars there.

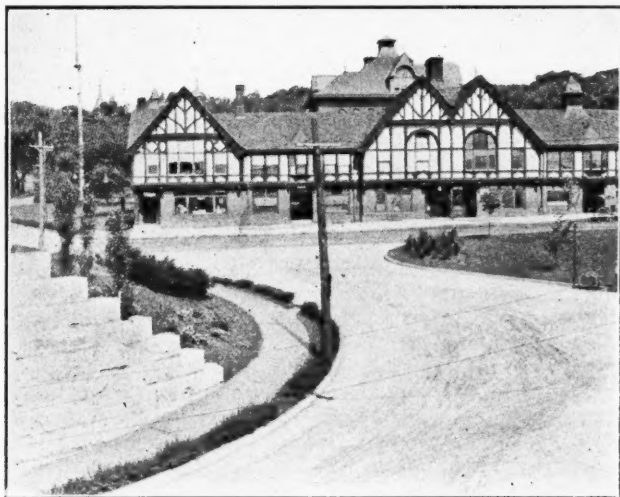
To Tax Street Cars

Topeka, Kan.—Commissioner H. P. Miller has prepared an ordinance which will call for a tax of \$25 a year for each car in service in the city. He claims that all other cities tax their street railways, that Topeka receives nothing for the present franchise, that the street car company has the free use of the streets much to the disadvantage of others who pay licenses and that it is only right and fair that a tax per car be made.

MISCELLANEOUS

Improvements in Belmont

Belmont, Mass.—It is interesting to note how the town of Belmont has increased its popularity as a residential district by improving its civic center. This was formed by



CIVIC CENTER, BELMONT, MASS.

eliminating the old grade crossing which was not only dangerous to traffic but exceedingly ugly. An attractive station with rough hewn field stone foundation up to the sills of the second floor has been built in the place of a dilapidated wooden building. The illustration shows the civic center seen from under a bridge carrying the elevated railway tracks.

State Brings Civic Expert

Austin, Tex.—The State Department of Agriculture is making big arrangements for the itinerary of H. D. Hemenway, of Northampton, Mass., the landscape architect, who will deliver addresses throughout the State under the supervision of the Department. Mr. Hemenway will discuss the most practical ways in which to bring about improvements that will beautify the cities and public grounds and he will speak in practically every large city in Texas as well as at smaller places and at a number of summer normals.

First Public Bath House Nearly Ready

New Orleans, La.—The old St. Mary's school building has been remodeled as a public bath and will be the first one opened by the Public Bath Commission. It is a two-story brick structure, situated on St. Mary street, between Rousseau and Celeste. Its rather flat front has been painted white, and it is provided with a spacious entrance. The bathing equipment will be for the most part on the first floor. The first room is being fitted up for an office, where the bathers will register, and this is provided with rails to prevent crowding. There are two small bathrooms, with stationary enameled bath tubs. Further on is the large swimming tank, 58 feet in length by 26 in width, and of a depth ranging from 3 to 5 feet. Above the tank, which is of white cement with white tiling at the sides and marble steps upon a gallery around the sides of the tank, are the dressing-rooms, each provided with a door and supplied with hooks inside for hanging up the clothes. There are ten shower baths, provided with hot and cold water, with nickel-plated furnishings. Brass rods will be placed at the sides of the marble steps at the entrance to the tank and iron railings guard the galleries. The building is being renovated and put in order for its present purpose by Michel Chesse & Co. It is a well lighted and ventilated, Burthe's patent ventilators being used. Air and light are admitted from the roof. Some of the windows are heart-shaped. They swing open by means of ropes, as do the ventilators. The upper floor will be used as a residence for the superintendent and his wife. There are six rooms on this floor and, in keeping with the lower portion of the building, all the painting and woodwork is finished in white.

Outside of Chicago City Hall Finished.

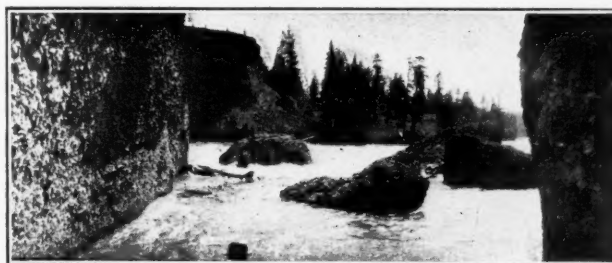
Chicago, Ill.—The outer structure of Chicago's new City Hall, which is to cost \$5,000,000, was finished July 14, and, unless unforeseen trouble occurs, the building will be ready for occupancy before Christmas. The Council chamber, which with the galleries and committee rooms occupies the north end of the second and third floors, is ornate in finishing. The last touches are now being put to the illuminated ceiling and a fire is kept constantly burning in the room to prevent the Chicago moisture warping the rare imported woods in which the room is trimmed. When completed it will have its own ventilating system. A lounging room for the Aldermen, with two immense stone fireplaces and lockers behind hand-carved paneled doors, runs the width of the Council chamber along the north end of the building. Aldermen pass through this to their seats on the floor of the Council and no passageway is provided between the Council floor and the public galleries for the lobbyists to pass back and forth, as they have in all previous Chicago Council chambers.

Former Vacant City Square Is No Longer An "Eyesore"

Columbus, Ind.—Columbus became metropolitan in a twinkling when Mayor Charles S. Barnaby turned on the water in the fountain that graces the center of the new city park, and Louis J. Scheidt, President of the Commercial Club, turned on the colored electric lights in the fountain. Hundreds of people saw the formal opening of the park. The new park is situated where the vacant city square owned by the Pennsylvania lines used to be. A year ago it was an "eyesore" to the city. Now it is graded, flowers are blooming in the beds, there is a big fountain playing in the middle, inviting seats are placed along the cement walks, lights mark the entrances and the circle around the fountain and 150 maple trees are growing rapidly for their first season. The park was furnished by public subscription and C. J. Rush, Chief Engineer at the water works, gave the fountain.

Proposed Park Site for Spokane

Spokane, Wash.—The illustration shows a location on the Spokane river selected by the River Beautiful Committee



Courtesy of John M. Goodwin.

CHASM ROCK RAPIDS, NEAR SPOKANE

as a desirable spot for a park site for the city of Spokane. It is known as the Chasm Rock Rapids, above Devil's Lake.

Concrete Bridge in Record Time

Duluth, Minn.—A complete concrete bridge 42 feet in length in six days and a half is the record made by Contractors McAdams & Preston in erecting a bridge over Sucker River last week. The bridge is of reinforced concrete and was erected in accordance with the plans of County Engineer E. K. Coe. The construction time is a record for this part of the country, and Mr. Coe has inspected the work and reports it satisfactory.

Outing of City Fathers of Two Cities

New Britain, Conn.—The Insurance city and the Hardware city, from present indications, will join in having an outing for the city fathers this year. Mayor J. M. Halloran, of New Britain, has sent a communication to Mayor Edward L. Smith, of Hartford, stating that the city fathers of New Britain have appointed a committee for the purpose of seeing if such a thing is possible. The pleasant features attached to such an affair appealed to Mayor Smith and he has made provision to meet the New Britain city fathers relative to the matter.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Ruling of Interest to Municipalities

Cost of Street Improvements—Statutes

City of Lexington v. Woolfolk.—The Acts of 1894 for the government of second class cities provided that the repeal of any law thereby should not affect any right or liability acquired or accrued thereunder, that the act should not affect any right, lien or liability accrued, established, or subsisting under and by virtue of previous charters, amendments thereto, or ordinances passed thereunder, and that it should not affect the right or liability acquired or accrued under previous charters, amendments thereto or ordinances passed thereunder, on the part of the city or any person, etc. Held, that this continued old laws in force as to existing rights and liabilities which were entirely unaffected, so that liabilities of abutting owners for the cost of a street improvement related back to the passage of an ordinance under Act April 19, 1890, ordering the work done, and the rights of the parties must be determined thereby, and the provisions of the act of 1894 as how the assessment and payment of the cost of an improvement shall be made do not apply to work which that act does not authorize the Council to have done.—Court of Appeals of Kentucky. 128 S. W. R., 102.

Defective Sidewalk—Contributory Negligence

O'Donnell v. City of Hannibal.—Plaintiff, in returning from church with a granddaughter, because the weather was pleasant chose a roundabout way home. She was injured by striking her foot against a projecting hinge in the sidewalk by which she was thrown down. When the accident occurred, she was conversing with and looking at her granddaughter, who walked a few steps in advance of her. The moon was shining, but no street lamps were burning and the walk was in the shadow; but there was sufficient light with ordinary care to tell whether the way was obstructed by objects of any magnitude. Held, that plaintiff was not required to give the sidewalk her undivided attention, but might rely to some extent on the presumption that the city had performed its duty to keep the sidewalk in repair, so that she was not guilty of contributory negligence as a matter of law.—Kansas City Court of Appeals. Missouri. 128 S. W. R., 819.

Personal Liability of Officers

Edwards v. City of Kirkwood et al.—Where a city collector acting under the direction of an ordinance engages special counsel for the city, and the contract with the special counsel is invalid because the ordinance delegated to the City Collector the power to engage special counsel which by statute was vested in the Mayor and Common Council, the City Collector is not liable to the attorney engaged, as municipal officers act for their principal, and not for themselves unless the contrary appears, and they incur no personal obligation except where by appropriate language a clear intention is shown for them to assume such obligation, and every person contracting with a public officer must ascertain at his peril the scope of the officer's authority.—St. Louis Court of Appeals, Missouri. 127 S. W. R., 378.

Indebtedness—Limitation—Provision for Payment

City of Cleburne v. Gutta Percha & Rubber Mfg. Co.—Under Constitution providing that no debt shall be created by a city unless provision be made to assess and collect annually a sufficient sum to pay the interest and create a sinking fund of at least 2 per cent thereon, where a note given by a city was payable within the year of its execution, it did not create a debt within the Constitution, requiring a sinking fund to liquidate it, since it matured concurrently with the city's revenues for that year, and, if paid according to promise, could not have been a charge on the revenue for future years. Court of Civil Appeals of Texas. 127 S. W. R., 1072.

Objectionable Report of Sewer Assessor

City of Lawrenceville v. Hennessey et al.—Under Local Improvement Act providing that when the proposed improvement is the construction of a sewer, the person appointed to make the assessment must designate and report the district which will be benefited by such proposed sewer, describing it by boundaries, he failing to so report, but merely assessing the lands contained in the sewer districts into which the board of improvement had divided the city, and with respect to which the council had passed ordinances, the report was objectionable; the determination of the city as to the districts not being conclusive that all property in the districts could be assessed, and the question being for the determination of the court if his report be challenged.—Supreme Court of Illinois. 91 N. E. R., 670.

Purchase of Supplies—Emergency—Meters

Mallon et al. v. Board of Water Commissioners et al.—Under Kansas City Charter, authorizing the Board of Water Commissioners to purchase materials and supplies in an emergency without competitive bidding, the necessity for purchasing water meters for installation by consumers cannot be regarded as an emergency, where the constant demand for meters could be approximately estimated in advance. The word "emergency" signifies some sudden or unexpected necessity, requiring immediate or at least quick action. Kansas City Court of Appeals, Missouri. 128 S. W. R., 764.

Bid for Bonds—Legality—Conditions

City of San Antonio v. E. H. Rollins & Sons.—A bid for municipal bonds provided that prior to delivery the city should furnish procedure satisfactorily evidencing the legality of the bonds to the bidder's attorneys, and that the deposit should be promptly surrendered in case the bidder's attorneys were unable to approve the legality of the bonds, such approval constituted a condition precedent to the city's right to forfeit the deposit, in the absence of a showing that the attorney's disapproval was fraudulent, capricious, and in bad faith.—Court of Civil Appeals of Texas. 127 S. W. R., 1166.

Defective Streets—Negligence

Town of Corinth v. Lawrence.—That a pedestrian who fell into an uncovered hole in the street near the sidewalk had noticed the hole there some months before the accident; that he was not thinking of the hole when he fell, and did not know that he was near it—because it was dark—did not preclude a recovery. Court of Appeals of Kentucky. 127 S. W. R., 1009.

Bonds—Liquidated Damages or Penalty

City of Marshal v. J. W. & W. S. Atkins, et al.—The holders of a city gas franchise, in consideration of an extension of time within which they were required to equip their plant and place themselves in readiness to furnish gas, executed a bond by which they agreed to pay the city \$1,000, on condition of their failure, within the time as extended, to have gas piped to the city and be in a position to supply gas, such amount to be payable to the city on April 26, 1909, unless gas should be supplied as provided. The ordinance extending the time required that the bond should be executed, and that the penalty thereof should be considered as liquidated damages. Held, That the amount so provided for should be regarded as liquidated damages, and not a penalty, and that on failure of the franchise holders to perform they and their surety were liable to the city on the bond without proof of actual damages. Court of Civil Appeals of Texas. 127 S. W. R., 1148.

Shutting Off Water—Injunction

Ball v. Texarkana Water Corporation.—Where a petition against a water company supplying the inhabitants of a city under a franchise is based on the theory that the water company is a public service corporation and, as such, compelled to furnish water at a reasonable rate, alleging the unreasonableness of the rates charged and a threatened irreparable injury by shutting off petitioner's water supply, a case is made for a preliminary injunction restraining the shutting off of the supply.—Court of Civil Appeals of Texas. 127 S. W. R., 1068.

NEWS OF THE SOCIETIES

League of Third Class Cities of Pennsylvania.—Governing cities by commission will be gone into pretty fully during the convention which will be held in York, August 23, 24 and 25. Harrisburg is the first city in the State to take steps toward investigating the commission plan. A resolution has been presented to Council, which provides for a committee of five, two of select and three of Common Council, to ascertain as fully and completely as possible by corresponding with all the cities where the plan has been tried successfully or otherwise. The committee will present its data to the City Solicitor and the latter will draft a bill to be enacted into a law at the next session of the State Legislature.

Good Roads and Drainage League of South Carolina.—This League was organized at Charleston, S. C., July 12, by an assembly of 200 delegates representing sixteen counties of the State. The meeting was made noteworthy by several pertinent addresses, among which was one by D. H. Winslow, a government good roads expert now in South Carolina to help blaze the way for improved highways. Orangeburg had the honor of winning the trophy cup offered for the largest number of automobiles coming into Charleston for the convention, with thirty-six machines here in good condition, while Columbia, which also entered the contest, came second with nine cars. After the adjournment the delegates went to the Isle of Palms.

Officers were elected for the convention as follows: President, W. G. Smith, of Orangeburg; vice-president, C. W. Boorman, of Columbia; secretary, E. I. Reardon, of Sumter; treasurer, W. D. Morgan, of Georgetown.

Officers of the league were elected as follows: President, Col. James Cosgrove, of Charleston; vice-president, C. W. Boorman, of Columbia; secretary to act as treasurer, E. I. Reardon, of Sumter. Executive committee: Orangeburg, Samuel Dibble; Richland, G. R. Rember; Sumter, R. L. Wright; Florence, H. H. Husbands; Dorchester, S. L. Simons; Charleston, H. P. Williams; Williamsburg, J. W. Kelly; Georgetown, J. B. Johnson; Polleton, W. W. Smoak; Lexington, R. L. Lybrand; Aiken, H. D. Gyles; Bamberg, J. F. Folk; Calhoun, A. J. Cauthen; Beaufort, Niels Christensen; Barnwell, Dr. L. F. Bonner; Hampton, E. F. Moore. Col. Cosgrove, Charleston, opened the convention. Mayor pro tem. W. G. Harvey, who is also president of the Charleston automobile club, officially welcomed the delegates. Supervisors for number of counties gave accounts of the road improvement work done under their direction. Resolutions were read petitioning the legislature to lay out and construct two or more highways, one running from mountain to sea and the other north and south across the State, to be constructed with State funds by a highway commission.

National Electrical Contractors' Association.—At the convention, Atlantic City, July 21, the following officers were elected:

President, M. S. Barnes, Troy, N. Y.; vice-presidents, Charles R. Krieger, Chicago; H. S. Potter, Boston; J. G. Hatzel, New York; treasurer, John R. Galloway, Washington, D. C.; secretary, W. H. Morton, Utica, N. Y.; sergeant-at-arms, J. G. Sterns, Buffalo. Niagara Falls, N. Y., was selected as the next meeting place.

Texas Mayors' Association.—The program of the tenth annual convention of the association, Tyler, July 28-29, is announced by the president, Mayor W. D. Davis, Fort Worth, as follows:

First Day—Called to order by president, 9:30 a. m. Invocation by Rev. New Harris. Address of welcome by John S. McIlwaine, City Attorney of Tyler. Response on behalf of Mayors of Texas by Mayor Heffner of Marlin. President's address, W. D. Davis of Fort Worth. Afternoon session convenes at 1:30 p. m. Municipal problems, Capt. B. B. Paddock, Fort Worth. Commission form of government, by Mayor Lewis Fisher, Galveston; F. C. Highsmith, Mineral Wells; T. E. Bird, Greenville, and A. B. DeLoach, Texarkana. Initiative, referendum and recall, Mayor Acheson, Denison, and Commissioner Mulkey of Fort Worth.

Second Day, 9:30 A. M.—Building a city, Mayor H. B. Rice, Houston. The city beautiful, George B. Kessler, park expert of Kansas City. How to keep municipal improvements of Western Texas towns apace with their rapid growth, Mayor Blanchard of Stamford, J. R. Delay of Plainview, T. D. Matthews of Haskell and J. N. Haney, Canyon City. Municipal improvement in Eastern Texas towns, Mayors John H. Bonner, Tyler, T. S. Cavan, Marshall, Y. L. Chiles, Teague, B. F. Sherrell, Jefferson and Mayor Bodenheimer, Longview. Afternoon session convenes at 1:30 o'clock. Address by Hon. Morris Shepard, Texarkana. Municipal sanitation, John B. Hawley of Texas. Water meters and their economy, Paul Hamilton, New York City. Unfinished business. New business. Bills and communications. Election of officers. Selection of next meeting place.

J. T. Lack of Tyler is secretary of the association.

Oklahoma Township Trustees Association.—Resolutions were adopted at the meeting, Oklahoma City, July 14, favoring the immediate construction of a series of good roads throughout the entire State, declaring against the present road tax law and for the repeal of the law which reduces the tax levies of the township. They also declared against the creation of the county excise board. The principal topic of the meeting was the question of good roads, which the meeting discussed at great length. Owing to the fact, however, that a decision of the courts is now awaited on the question of whether good roads districts, eighteen miles square, may be formed by the townships for the purpose of voting bonds for the construction of roads, this matter was not discussed at great length. The convention, however, favored the construction of a system of good roads reaching across the entire extent of the State.

American Society of Mechanical Engineers.—A party of 160 members and guests sailed on the steamer "Celtic" from New York City July 16 to attend the joint meeting with the Institution of Mechanical Engineers. It is expected that they will be joined in England by about 100 other members and guests already in Europe. Papers to be presented at the joint meeting will include papers on the electrification of railways, by President George Westinghouse, L. R. Pomeroy and William B. Potter; on handling locomotives at terminals, by Frederic M. Whyte, H. H. Vaughan, F. H. Clark and William Forsyth; and a paper on involute gearing by Wilfred Lewis. A symposium on high-speed tool practice will be contributed by leading American manufacturers.

Brussels International Road Congress.—The Second Congress will be held in Brussels August 1 to 7, arrangements being as under: Monday, August 1, opening meeting of Congress will be at the Palais des Academies; meetings of sections at the Palais de la Nation and the Palais des Academies; reception by the Belgian Society of Engineers.

Tuesday there will be meetings of sections, and in the afternoon visits to Quenast and Lessines porphyry quarries. Wednesday a visit will be made to Antwerp and a reception by municipality. Thursday there will be meetings of sections and discussion of various subjects; Friday a visit to Ostend. Saturday meeting of sections will be held at Palais de la Nation; final meeting of Congress at the Palais des Academies, and a banquet in the evening. Sunday there will be a visit to Exhibition and in the evening a reception by the Municipality at the Town Hall. The following British delegates will be among the readers of papers:

Robert Drummond, county surveyor of Renfrewshire, "Metalled and Paved Roads."

R. O. Wynne-Roberts, M.Inst.C.E., Westminster, "Laying of Light Railways and Tramways" and "Road Materials."

T. H. Yabbloom, M.Inst.C.E., city engineer of Bristol, "Cleansing and Watering."

Col. R. E. Crompton, C.B., "Choice of Surfacing Materials."

E. J. Silcock, M.Inst.C.E. (Westminster and Leeds), "The Carrying Out of Road Work in Connection with Lighting and Water Supply."

H. T. Wakelam, M.Inst.C.E., county engineer of Middlesex, "The Use of Mechanically Driven Petrol Motor Rollers."

W. Worby-Beaumont, M.Inst.C.E., and E. Shrapnell Smith, "Road Vehicles."

Engineers' Society of Western Pennsylvania.—On invitation of officials of the Department of Public Works, Bureau of Construction of the City of Pittsburg, the Dravo Contracting Company and the Friday Contracting Company, members of the society made a visit of inspection July 16 to the Twenty-second street bridge, now being built over the Monongahela River at Pittsburg, and the new concrete arch bridge being erected over Negley Run at Meadow street, Pittsburg. The construction work at both these bridges presented features of unusual interest.

Wise County Good Roads Association.—This association has been reorganized with Messrs. John W. Chalkley, president; W. B. Fulton, secretary and treasurer; H. F. Whitehead for Richmond district, Dr. T. M. Cherry for Gladville district, A. P. Crockett for Lipps district, and Thurston Banner for Roberson district, vice-presidents. These officers were made an executive committee of the association, and were requested to take charge of and conduct the citizens' movement in aid of carrying the election to be held September 6, 1910, for an issue of \$700,000.

Convention on Commission Government.—A convention of civic organizations interested in the adoption of the commission form of government by cities of the third class in Pennsylvania is being arranged for Harrisburg, Williamsport or some centrally located city in the month of September, or in October at the latest. The request for such a convention has been made by the Erie and Meadville Chambers of Commerce as the most effective step of getting the agitation for government by commission before the people. Secretary Jacob Umnitz is sending out letters of explanation telling how it happens that Erie is at the front in the discussion and what is hoped to be accomplished.

Calendar of Meetings

- July 26-27.
Western New York Volunteer Firemen's Association.—Tenth Annual Convention, Lockport. Charles F. Foley, Secretary, Lockport, N. Y.
- July 26-28.
Central New York Firemen's Association.—Convention, Auburn, N. Y.—Thomas Knobel, Secretary, Homer, N. Y.
- July 26-28.
Nebraska State Firemen's Association.—Tournament, York, Neb.
- July 26-28.
Ohio Electric Light Association.—Annual Convention, Cedar Point, Ohio.—D. L. Gaskill, Secretary, Greenville, Ohio.
- July 26-29.
American Society of Mechanical Engineers.—Joint Meeting with the British Institution of Mechanical Engineers at Birmingham and London, England.—Calvin W. Rice, Secretary, 29 W. 39th st., New York, N. Y.
- July 28-30.
National Good Roads Association.—Annual Meeting, Niagara Falls, N. Y.—A. M. Grady, Secretary, Chicago Opera House Bldg., Chicago, Ill.
- August 4-6.
Ohio State Fire Chiefs' Association.—Annual Convention, Toledo, O.
- August 8-13.
Western Pennsylvania Volunteer Firemen's Association.—Convention, Carnegie, Pa.
- August 10-11.
Vermont State Firemen's Association.—Convention and Tournament, Burlington, Vt.—E. D. Moore, Secretary, Bennington.
- August 10-12.
Upper Peninsula Firemen's Association.—Annual Tournament, Sault Ste. Marie, Mich.
- August 16-18.
Wisconsin Paid Firemen's Association.—Annual Convention, La Crosse, Wis.
- August 16-19.
Firemen's Association of the State of New York.—Thirty-eighth Annual Convention, Watertown, N. Y.—Thomas Horrahan, Secretary, Frankfort, N. Y.
- August 22.
New York State Fire Chiefs' Association.—Meeting and Banquet, Syracuse, N. Y.
- August 23-25.
League of Third-Class Cities of Pennsylvania.—Annual Convention, York, Pa.—Mayor Jacob E. Weaver, President, York, Pa.
- August 24-26.
Virginia State Firemen's Convention.—Alexandria, Va.—G. C. Cummings, Secretary, Portsmouth, Va.
- September 5.
Greene County Firemen's Association.—Twenty-second Annual Convention, Tannersville, N. Y.
- September 5.
Rhode Island State Firemen's League.—Annual Muster, Manville, R. I.
- September 5-9.
American Public Health Association.—Annual Meeting, Milwaukee, Wis.—W. C. Woodward, Secretary, Washington, D. C.
- September 6-8.
Association of Edison Illuminating Companies.—Annual Meeting, Thousand Islands, N. Y.—Walter Neumuller, Assistant Secretary, 55 Duane st., New York, N. Y.
- September 6-9.
Pacific Coast Association of Fire Chiefs.—Eighteenth Annual Convention, Stockton, Cal.—A. A. Sumner, Secretary, Anacortes, Wash.
- September 8-12.
Michigan Gas Association.—Annual Meeting on Steamer sailing from Detroit, Mich.—Glenn R. Chamberlain, Secretary, Grand Rapids Gas Light Co., Grand Rapids, Mich.
- September 14-16.
League of Michigan Municipalities.—Annual Convention, Lansing, Mich.
- September 20-22.
Central States Water Works Association.—Convention, Indianapolis, Ind.
- September 21-23.
Colorado Electric Light, Power and Railway Association.—Annual Convention, Colorado Springs, Col.—J. C. Lawler, Secretary, P. O. Box 938, Colorado Springs, Col.
- September 21-23.
Massachusetts State Firemen's Association.—Thirty-first Annual Convention, Lowell, Mass.
- September 26-30.
National Irrigation Congress.—Annual Meeting, Pueblo, Col.—Arthur Hooker, Secretary, Pueblo, Col.
- October 10-11.
Massachusetts Police Association.—Annual Convention, Holyoke, Mass.

PERSONALS

- ARMSTRONG, CHARLES G., New York, N. Y., has been appointed by Bridge Commissioner Martin consulting engineer at a salary of \$7,500.
- BEACH, A. L., De Funiak Springs, Fla., has been elected Mayor.
- BELL, D. J., New Smyrna, Fla., has been elected Mayor.
- BURTON, WALTER, Rehoboth, Del., has been elected Mayor.
- CARTER, FRANK, Richmond, Ind., has been elected Assistant Fire Chief.
- DICKERSON, J. E., Pablo Beach, Fla., has been elected Mayor.
- DWIGHT, DR. E. S., Smyrna, Del., has been elected President of the Health Board.
- ERICSON, JOHN, City Engineer of Chicago, and former Deputy Commissioner of Public Works Paul Redieske were declared not guilty on charges of defrauding the city in connection with the payment of M. J. McGovern's contract for excavating a sewer.
- FORSBURG, COL. AUGUSTE, former City Engineer of Lynchburg, Va., died July 15; he was 79 years old and had commanded the 42d Virginia Regiment in the Civil War.
- HITCHCOCK, FRANK H., Assistant Fire Chief of Council Bluffs, Ia., has been appointed Fire Chief of Tulsa, Okla.
- HOWE, DR. W. A., Phelps, N. Y., has been appointed State Deputy Commissioner of Health.
- KELSEY, FRANK C., until recently Consulting Engineer for the municipal hydroelectric plant being built by Tacoma, Wash., has entered consulting practice in that city.
- KOONTZ, AUGUST O., South Bend, Ind., has resigned from the presidency of the Board of Water Works Trustees to become engineer for the city water department during the two years required to carry out plans for the improvement of the city's water works system.
- NICHOLAS, H. B., Philadelphia, Pa., has been appointed chief engineer of the Philadelphia Rapid Transit Company, succeeding W. S. Twining, resigned.
- PHILLIPS, GEORGE M., Cambridge, Md., has been elected Mayor.
- PORTER, PHIL. E., Annapolis, Md., has been reappointed City Clerk.
- SHEDD, FREEMAN B., Lowell, Mass., has presented the city with 50 acres of land for a park.
- STAMPER, DAVID, Owingsville, Ky., has been elected Town Marshal, vice J. W. Emmons, who resigned in order to devote his entire time as Collector of Taxes.
- STEWART, N. VAN DYKE, Wilmington, Del., has been appointed City Bacteriologist.
- SUTER, R., New York, N. Y., has resigned his position of assistant designing engineer under the Board of Water Supply, New York City, to join the engineering staff of the New York State Water Supply Commission.
- THOMAS, FRANK L., Corpus Christi, Texas, has been appointed Assistant City Engineer.
- TOWNSEND, DR. J. H., New Haven, Conn., has been re-elected Secretary of the State Board of Health.
- TWEEDY, J. R., Eatonton, Ga., has been elected Mayor.
- WILSON, ALEXANDER A., Philadelphia, Pa., head of the Phipps Institute, has been appointed by the Baltimore Tuberculosis Commission to assist the commission in its investigations.

INCORPORATIONS

- Big Niangua Hydroelectric Company, Kansas City, Mo.; capital \$150,000. Incorporators: R. E. Bremer, F. M. Bremer and H. M. Bremer.
- Branchland Bridge Company, Branchland, W. Va.; capital \$20,000. Incorporators: L. R. Via, A. M. Parson, J. W. Lute and Rufus Switzer, Huntington, W. Va., and W. E. Bardslee, Clarksburg, W. Va.
- Cant-Gilbreath Construction Company, Chester, Ill.; capital \$10,000; contracting. Incorporators: Elmer Cant, Whitney Gilbreath and W. L. Husband.
- Climax Concrete Machine Company, Richmond, Va.; capital \$50,000. Incorporators: John Dahn, C. L. Albertson, L. O. Wendenburg.
- Creosote Pole Co., Texarkana, Ark.; capital \$25,000. Incorporators: B. G. Cox, F. W. Shiffin and Thomas Sorsby.
- The Crouch Construction Company, Jersey City, N. J.; general contractors; capital, \$100,000. Incorporators: H. O. Coughlan, L. H. Gunther, H. A. Black, all of Jersey City, N. J.
- Eastern Tennessee Power Company, Cleveland, Tenn.; capital \$1,750,000; understood company will own water-power-electrical plant mentioned recently as to be constructed by J. G. White & Co., 43 Exchange pl., New York; develop 30,000 horsepower at first and 20,000 additional in future. Incorporators: J. D. Alsop, H. C. Beck, Sherman Beck and R. L. Westcott, of Chattanooga, and Henry Crumbliss, of Kingston.
- Home Light & Power Company, Greenville, S. C.; capital \$100,000. Incorporators: J. Thomas Arnold, Jos. A. McCullough, J. M. Geer, Lewis M. Parker and others.
- LaPryor Water & Light Company, La Pryor, Tex.; capital \$8,000. Incorporators: W. G. Bates, D. A. Harrison and R. L. Couser.
- C. J. McKeon Company, Chicago; capital \$5,000; contracting. Incorporators: Harry P. Dolan, Frank C. Culen, Samuel Pires.
- The McMahon Construction Company, Newark, N. J.; contracting and construction; capital, \$50,000. Incorporators: James McMahon, Patrick J. McGuinness, Leo W. McMahon, Newark, N. J.
- Morrillton Light & Power Company, Morrillton, Ark.; capital \$20,000. Incorporators: William L. Moose, Clifton Moose and G. H. Burr.
- The Orange Construction Company, Orange, N. J.; general concrete and construction work; real estate, etc.; capital, \$5,000. Incorporators: John Harms, Orange, N. J.; Joseph Klein, New York City; Louis E. Rosenthal, Newark, N. J.; Carolina Harms, Orange, N. J.
- Public Service Electric Company, Newark, N. J.; manufacture and distribute electric power; capital, \$15,000,000. Incorporators: Thomas N. McCarter, Rumson, N. J.; Edwin W. Hine, Orange, N. J.; Dudley Farrand, Newark, N. J.
- Quincy Adams Quarry Company, Quincy, Ill.; capital \$10,000; quarrying granite. Incorporators: John Lavers, 87 Granite st., Quincy; Forbes Craig, 57 Independence ave., Quincy; George W. Abele, 87 Milk st., Boston.
- Richmond Power Corporation, Midlothian, Va.; capital \$500,000; plans construction of plant, using as fuel coal from mines, to transmit electricity for power to Richmond, Petersburg and Norfolk; install initial unit of 10,000 horsepower. Incorporators: S. Dabney Crenshaw and Levin Joynes, Richmond, Va.; F. W. Meulen, St. John Clarke and Henry B. Twombly, New York.
- Sterilization Company, Newark, N. J.; capital \$100,000; construct works for the purification and sterilization of sewage, etc. Incorporators: Frederick Saxelby, Geo. W. Swinburne, both of East Orange, N. J., and Geo. E. Keeler, Newark, N. J.
- Stone Harbor Electric Light & Power Company, Camden, N. J.; capital \$100,000; operate electric lighting, heating and power plants. Incorporators: Howard S. Risley, David Risley, Reese P. Risley, all of Stone Harbor, N. J.; Chas. A. Farnum, Real Estate Bldg., Philadelphia, Pa.; Edward C. Waddington, Woodstown, N. J.
- Union Road Company, Anna, Ill.; construct and operate toll roads; capital, \$5,000. Incorporators: Edward Samson, E. B. Walton, T. P. Sifford.
- Water Supply Company, Centralia, Ill.; capital \$150,000; operate a system of water works. Incorporators: J. J. Bundy, C. O. Davis and C. D. Tufts.

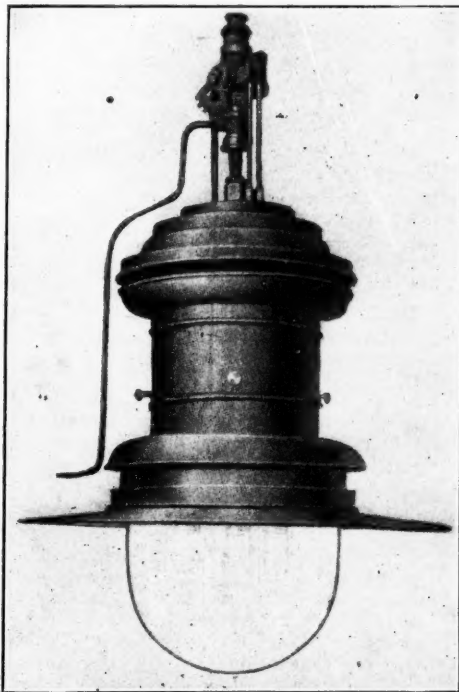
MUNICIPAL APPLIANCES

Machine for Applying Finishing Coat to Concrete Curb and Gutter

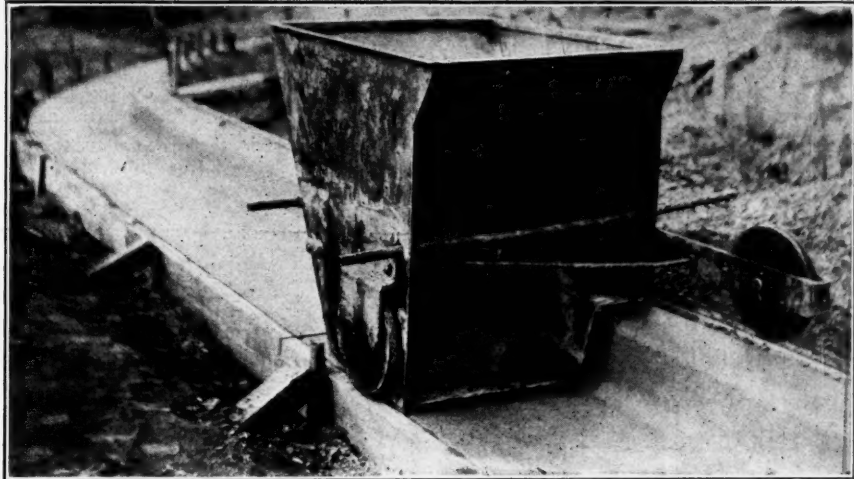
A MACHINE for applying the finishing mortar to combined concrete curb and gutter has been invented by Theo. Rauschenbach, of the Rauschenbach Construction Company, Evansville, Ind., and has been in successful operation on his company's work during the season. The machine, shown in the cut, consisting of a hopper with a finishing plate at the bottom shaped to conform to the surface of the finished curb and gutter, runs on wheels which use a rail attached to the back board and the front board as tracks. The rail keeps the machine in alignment, and the whole, running on the two form boards, maintains a true grade. The finishing mortar is placed in the hopper and is fed automatically to the finishing plate as the machine is pulled forward over the previously prepared concrete base. The operation is simple and rapid. The inventor states that a gang of fifteen men with a concrete mixer can readily put in from 800 to 1,000 linear feet of finished curb and gutter in one day. Besides being a labor and cost saver, the machine is said to give an exceptionally true line and grade to the work. A patent has been applied for and preparations made to place the machine on the market.

Inverted Gas Lamp

A NEW three-light, low-pressure inverted gas lamp, which is claimed to give a highly intensified light suitable for lighting public places, has been placed on the market by the Deutsche Gasglulicht Aktiengesellschaft, Berlin, Rotherstrasse 8-15, the largest manufacturers on the European continent for manufacturing articles for gas illumination. The lamp, shown in the illustration, is made for 600 and 1,000 candle-power, with a gas consumption of $2\frac{1}{3}$ cubic feet per 100 candle hours. The lamp is said to be perfectly protected against wind and is of simple and solid



GERMAN 3-LIGHT INVERTED GAS ARC LAMP

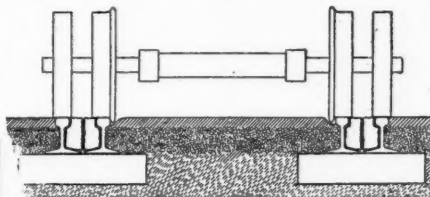


MACHINE FOR FINISHING CEMENT CURB AND GUTTER

construction. The economy, which is vouched for by official measurements, has been brought about by the accurate proportions of chimney, burners and mantle.

Double Safety Wheel System for Railways

AN improvement in railway construction claimed to result in safety, strength, economy, comfort, speed and capacity, has been invented by Levert Clark, Buhl Building, Detroit, Mich. The system consists in the construction of two parallel rails close together in the place of one and the equipment of the trucks of the rolling stock with two wheels close together on each side of the car in the place of the customary one wheel. Both tracks and wheels under the Clark system would be considerably lighter in weight than those now used. The illustration shows the



CLARK DOUBLE SAFETY SYSTEM OF TRACTION

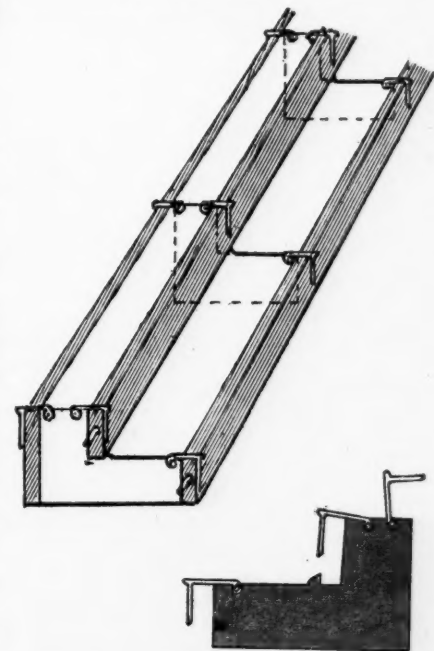
application of the system to street railway construction. The street pavement is laid level with both sides of the outer auxiliary rail, omitting the usual wheel flange channel, required only for the flanged wheel on the gauge track. The close interval between the two track members is preferably paved with stone blocks or brick. The flangeless tire rolls on the outside auxiliary rail like an ordinary wagon wheel, to smooth the way and boost the flanged wheel over cuts and frog crossings, without fracturing the crossings. The inventor states that a pair of rails on each side for double wheels need not be heavier than single rails now used for necessary heavy single wheels, because each track member bears only half the weight or burden of traffic now carried by single track alone.

A space is left at the joints between abutting rails to allow for expansion and contraction, which is confined to the individual rail. The movement which takes place in tracks with welded joints is thus avoided.

An advantage is claimed in the case of electric traction in that there is a better opportunity for the current to return to the power house than in the case of a single track. Short bonds between the tracks would be used and a continuous circuit maintained. Breaks as in the case of welded tracks would not interrupt the current, and the danger of electrolytic destruction of water and gas pipes would be decreased.

Curb and Gutter Forms

CLAMPS and spacers for facilitating the laying of combined concrete curb and gutter are manufactured by S. C. Smith & Son, Waverly, N. Y. The upper illustration shows the forms set up with clamps and division plates or spacers shown by dotted lines. The lower cut shows the spacer or division plate with three hooks—each one holding in position one of the three planks needed for the back of the curb, front of the curb and front of the gutter. The device is substantial and convenient, less time being required to adjust the hook than would be required to put screw clamps in place. The manufacturers state that stakes are unnecessary and that a single man can withdraw the plates and finish the curb.



CONCRETE CURB AND GUTTER FORMS SET UP—DIVIDING PLATE

TRADE NOTES

Cast Iron Pipes.—Chicago: The market is comparatively quiet, though some good municipal lettings are pending. Quotations: 4-inch, \$28; 6 to 12-inch, \$27; 16-inch and up, \$26. San Francisco: There is nothing in immediate prospect calling for any unusual tonnage, but the outlook is favorable for a continued movement of small lots. Birmingham: There is no accumulation of stock and local plants are being operated to capacity. Quotations: 4 to 6-inch, \$23; 8 to 12-inch, \$22; over 12-inch, average, \$21. New York: Inquiries are light and no important business is in sight. Quotations: 6-inch, carload lots, \$23.50 to \$24.

Lead.—Quotations: New York, 4.40c; St. Louis, 4.25c.

Water Power Development.—The Wisconsin Traction, Light, Heat and Power Company will spend over \$1,000,000 within the next two years developing the water power of the Wolf River, according to John I. Beggs, president and general manager of the Milwaukee Electric Railway and Light Company. The plan has been in process of formation for the past two years. The necessary land has been secured near Gardner's Dam, 70 miles from Appleton. The power which will be developed will be used by the inter-urban system operated in the Fox River Valley by the Wisconsin Traction, Light, Heat and Power Company.

Supplies Wanted.—The Julesburg Land Company, Julesburg, Col., having recently organized an irrigation district, is in the market for the following supplies: Vitrified tile, steel gates for headgates to laterals; heavy steel gates for reservoir outlets; scrapers; fresnoes; wheelers; dump wagons; rubber boot protectors; forms for cement curbing.

Valves.—The New York branch of the Kennedy Valve Manufacturing Company, 57 Beekman street, New York, has received orders for 400 8-inch, 15 12-inch, 42 16-inch and 70 20-inch, high-pressure valves, all of them for use on the Cranford Company's contract on the extension of the high-pressure fire protection system in Brooklyn, N. Y. For the same work the Kennedy company has received an order for 20 valves from Haggerty & Drummond, while for the downtown extension of the high-pressure system in New York City, Mr. J. H. Holmes, contractor, has ordered 135 8-inch, 60 12-inch and 28 16-inch high-pressure valves.

Concrete Mixers.—The Capital Iron & Wire Works, Kansas City, is representing the Milwaukee Concrete Mixer & Machinery Company in the sale of the latter's products, which, although placed on the market only a few months ago, have met with considerable favor in that section.

Gas Engines.—The Bruce-Macbeth Engine Company, Cleveland, O., has recently taken orders for fourteen gas engines ranging in size from 75 horsepower to 200 horsepower, in addition to a number of smaller gas power units.

Alternator.—The Electric Light Company, Manitowoc, Wis., is going to install an Allis-Chalmers 100 kw. alternator to care for the increased lighting load which has recently been added by the extension of the street lighting system.

Smoke Consuming Boiler.—The Smoke Consuming Boiler Company, Johnson City, Tenn., is now getting equipped to manufacture a boiler which is claimed to positively burn its smoke and effect a saving of 20 to 30 per cent in the fuel. It is described as extremely simple in construction, having a large hopper that incloses the firebox, which extends above the top of the boiler and is filled with coal, holding two tons or more. The coal is automatically fed down on the grate and is converted into coke before it reaches the grate. The gas and smoke is drawn through a small opening directly over the hottest part of the fire, where it is consumed. In a test of a boiler rated at 45 hp there was actually developed 88.4 hp, or nearly twice the commercial rating without emitting black smoke from the stack. The boiler evaporated 12.77 lb. of water per pound of combustible from and at 212 degrees F. and consumed 3.16 lb. of coal per horsepower per hour, generating steam at an average pressure of 97 lb. The boiler is the invention of W. J. Ellis, of Andrews, N. C.

Trench Braces.—The Dunn Mfg. Co., Pittsburg, Pa., is putting on the market in considerable quantity a special extension trench brace, which is made with ball and socket joints that enable it to be used in any position.

Pneumatic Tires.—William Haible, Fire Marshal of Elgin, Ill., writes that the Firestone tires that have been on their hose wagon since it was put into commission, January 24, 1905, are still in service and giving excellent satisfaction. As an instance of the economy of rubber tires it is claimed it is no uncommon thing for such tires to last from eight to ten years under ordinary service conditions.

Dryers.—William B. Ruggles and Robert G. McGann, respectively president and vice-president of the Ruggles-Coles Engineering Company, 50 Church street, New York, have just returned from a European trip during which they established agencies and sold two 90-inch A-14 dryers, three 70-inch A-10 dryers and one 60-inch A-8 dryer.

Pumping Engines and Producers.—The gas and pumping engine departments of Allis-Chalmers Company, which are kept very closely in touch with foreign practice, will be represented at the joint meeting of the Institution of Mechanical Engineers and the American Society of Mechanical Engineers, in Birmingham, England, by E. T. Adams, who went abroad some months ago. Mr. Adams is an engineer of broad experience and has designed some of the largest and most successful power and pumping plants in this country. At present he is manager of both of the departments mentioned.

Locomotive Cranes.—The Industrial Works, Bay City, Mich., manufacturers of locomotive cranes, is making some additions and improvements, including a large new office building. One of the units in the power house will also be replaced by another better adapted to the service. Contracts have all been let.

Contractors' Tools.—The Anderson Forge & Machine Company, Detroit, Mich., is about to install a 250-kw and a 125-kw 60-cycle, three-phase, 240-volt alternating current generators in the new plant which it is building. They will be furnished by Allis-Chalmers Company, whose office is in the Union Trust Building.

Electric Plants to Merge.—Preliminary plans for the merger of eight electric companies in as many Western cities have been made public by Henry L. Doherty, New York, executive head of the Denver Gas and Electric Company, a majority of whose stock is held in Columbus. It is planned to put the company in a holding corporation, along with the Lincoln Gas and Electric Company, of Lincoln, Neb.; the Knoxville Gas and Fuel Company, of Knoxville, Tenn.; the Empire District Electric Company, of Joplin, Mo.; the Spokane Gas and Fuel Company, of Spokane, Wash., together with three other companies, the names of which were not divulged. All the companies will enter the merger on a basis of earnings.

Waterproofing.—The Mimwax Company, 1123 Broadway, New York, whose refinery is in Brooklyn, has prepared several grades of waterproofing, as follows: Below-grade waterproofing is a tough, flexible, elastic fabric, saturated with mimwax and applied with hard waterproofing, swabbed or hot. Subway cloth, No. 55, is impervious to gas-dirt and similar disintegrating conditions. Structural steel coating, No. 100, is made in black and olive green, and it is claimed cannot be removed from the metal except by solvents not used in building construction. Damp-proofing, No. 300, forms a tough, black, rubber-like waterproof skin over the surface to which plaster will adhere. Stone-backing is similar, and is also applied with a brush. It is claimed to prevent staining by Portland cement. Clear-waterproofing is a clear mineral liquid, which enters a porous substance and fills the voids.

Steel Tanks.—The Western Pipe & Steel Company has concluded the purchase of a 12-acre tract at Richmond, Cal., and will proceed at once with the erection of an up-to-date plant for the manufacture of all descriptions of riveted pipe, well casing and tanks up to 65,000-barrel capacity. The equipment will cost between \$75,000 and \$100,000. The company has on hand a large amount of tank work for the oil fields, where it has a plant in operation, in addition to large shops in San Francisco and Los Angeles.

Crushers.—The T. L. Smith Company, whose main offices are now in the Majestic Building, Milwaukee, Wis., has quite a number of Symons crushers of the improved type in operation and is able to point to some excellent records of service. The demand for concrete mixers and other apparatus of its manufacture continues large, and the capacity of the company's present plant has been severely taxed. Prompt deliveries are, however, being effected.

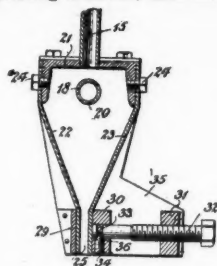
Paving Brick.—Paving brick and block manufacturers in the vicinity of Columbus, O., are doing some good business, the demand for these grades being very good this season. Many municipalities have passed the necessary legislation for street and road improvement, and it is currently reported that nearly 500 miles of new paved streets and roads will be built in the Buckeye state this season.

High Test Paving Brick.—The United Fire Brick Co., Conneaut, O., is now operating 17 kilns and is declared by many to be one of the most important industries of that town. The company is manufacturing a paving brick that is said to have lost but 14 per cent. in a standard rattler test.

PATENT CLAIMS

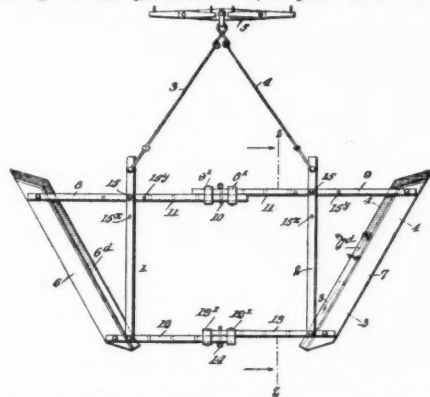
962,209. ROAD-OILER. William H. Gailor, Saratoga Springs, N. Y. Serial No. 509,458.

In a road oiling device, a delivery reservoir, comprising a cover, end members, side



members having converging upper parts and straight parallel lower parts, the latter terminating in spaced apart parallel edge portions and means for varying the distance between the said spaced apart parallel edge portions of the said side members.

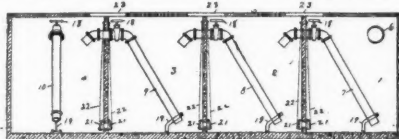
962,267. ROAD-GRADER. Spencer Allen Stone, Chillicothe, Mo. Serial No. 537,806. In a road grader, a pair of oppositely disposed scrapers, a frame connecting said scrapers, said frame comprising a pair of longitudinal parallel rods, a pair of trans-



verse parallel rods being pivotally secured to one of said scrapers, one of said transverse rods being adjustably secured to one of said longitudinal parallel rods, and a second pair of transverse parallel rods secured to the other scraper and being adjustably secured to the other of said longitudinal rods, the respective ends of each pair of transverse rods being adjustably secured together.

962,606. SEWAGE DISPOSAL PLANT. Martin J. Wiest, Govans, Md. Serial No. 510,760.

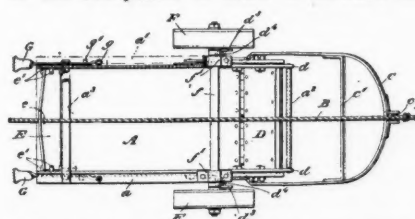
A sewage disposal plant comprising a plurality of intercommunicating tanks, one of which has an inlet for the sewage, a pipe



in each tank extending from near the bottom up into the next adjoining tank near the top thereof, valves in the partition walls of each tank, an aseptic bed having an outlet, and a number of apertured pipes arranged on top of said bed and having communication with one of said tanks.

963,563. EXCAVATING APPARATUS. Charles L. Hopkins, New Orleans, La. Serial No. 489,748.

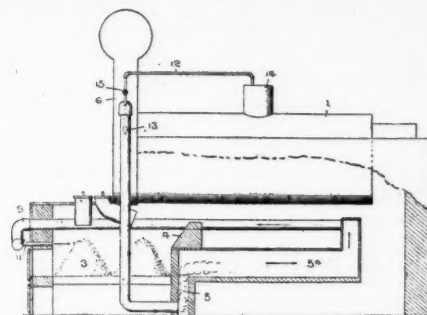
The combination with a receptacle adapted to dump by tilting, of a cable connected to the receptacle to draw it forward and



to dump it and draw it backward, and a tail-gate movably mounted in the receptacle and connected to the cable to be removed by the latter out of the path of the discharging load when the cable is dumping the receptacle.

961,810. COMBINED GAS AND SMOKE CONSUMING ATTACHMENT. Frank Shmonsky, Ridgway, Pa. Serial No. 508,342.

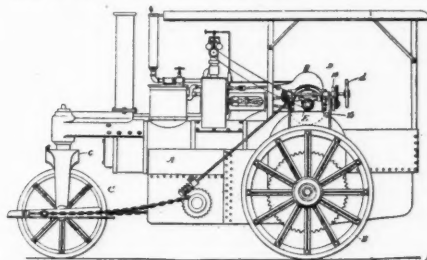
In a gas and a smoke consuming device, the combination with a foundation having a fire box and a bridge wall therein, said



bridge wall having a cavity and a boiler on said foundation; of a pipe adapted to collect the gases and smoke when discharged from said boiler and convey the same into said cavity, said pipe leading through said fire-box in its course to said cavity, an auxiliary pipe extending from said cavity to the forward end of said foundation and means to convey said gases into the fire-box above the fuel.

963,509. STEERING MECHANISM FOR ROAD-ROLLERS. J. Grove Brown and George T. Bacon, Groton, N. Y., assignors to Monarch Road Roller Co., Groton, N. Y., a corporation of New York. Serial No. 516,351.

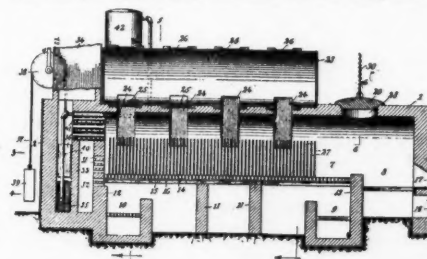
In power-steering gear of the character mentioned, the combination with a shaft, and a wheel thereon provided with circum-



ferential beveled flanges, of a beveled friction-wheel interposed between said flanges, a shaft for said friction-wheel, a head in which said shaft is mounted, a bearing for said head, means for adjusting said bearing axially of the friction-wheel, means for actuating said head to shift the friction wheel into and out of engagement with the respective flanges, steering devices, and connections between the same and the friction-wheel.

963,554. GARBAGE-CREMATORY. William K. Herbert, McKeesport, Pa. Serial No. 488,100.

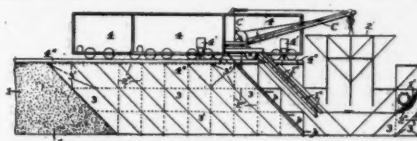
In a device of the class described, the combination with a casing having inlet and discharge openings, of means for closing said inlet openings, an incinerating chamber having openings corresponding to said discharge openings, means for closing said



last-mentioned openings, a grate for said incinerating chamber, an auxiliary inclined side grate co-acting with said openings in said incinerating chamber, a fire box for heating said incinerating chamber, an auxiliary fire box for heating said grate, a checker-work connected to said incinerating chamber and adapted to heat the gases from said incinerating chamber, a combustion chamber communicating with said incinerating chamber through said checker-work, means for spraying hot water on the gases from said incinerating chamber, means connected with the incinerating chamber for heating the water sprayed into said gases, and means for storing the hot water, said combustion chamber having an outlet for the products of combustion.

963,159. PROCESS FOR MAKING CONCRETE DAMS, WALLS, BRIDGES, CONDUITS, SEWERS, ETC. Franklin S. Lamson, Washington, D. C., assignor to Cosmos Construction Co., Washington, D. C. Serial No. 299,800. Renewed March 9, 1908. Serial No. 420,056.

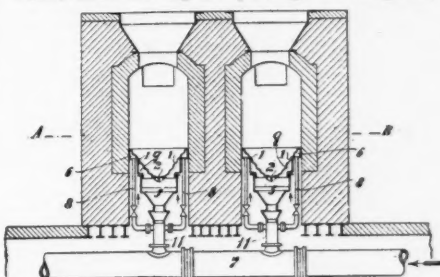
In the construction of concrete dams, walls, bridges, conduits, sewers, etc., which are made of plastic material, laid in layers,



to be united or compacted while fresh, the method of laying such layers of plastic material at an angle from the horizontal of 45°, more or less, whereby each layer of fresh materials is relatively short, and may be united or compacted with its preceding plastic layer and its succeeding fresh layer, thereby enabling the making of structures of any desired length monolithic constructions, and also the completing of structures from bottom to top, as the work advances, without joints.

963,430. GRATE FOR REFUSE-CONSUMERS. Johann Aloys Fried, Barmen, Germany, assignor by mesne assignments, of two-thirds to Max Bouchsein, New York, N. Y. Serial No. 454,425.

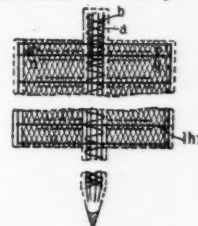
A grate provided with two diverging side walls, each having air passages through it,



in combination with air-chambers independent of each other outside of said walls, an air inlet pipe directed upward from below said grate and branch pipes from said air pipe supplying said air chambers substantially as set forth.

962,784. SHEETING-PILE OF REINFORCED CONCRETE. Sylvain Louis Ravier, Paris, France. Serial No. 517,810.

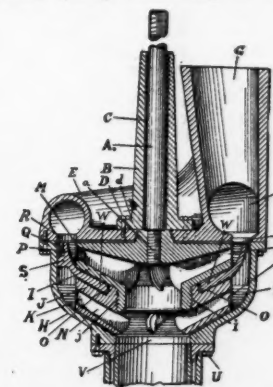
A single pile of reinforced or hooped concrete having an enlarged portion extending beyond both sides of the pile and consti-



tuting a monolithic sheeting, but being of ordinary cross-section at its lower or pointed end.

963,756. TWO-STAGE PUMP. William T. Gray, El Campo, Tex., assignor to El Campo Machine Co., a corporation of Texas. Serial No. 529,337.

A rotary pump consisting of two super-



posed runners, which are screwed together, each being provided with a set of vanes and a set of discharge passages.

BOOK REVIEWS

Municipal Franchises. By Delos F. Wilcox. Vol. I. Introductory and Pipe and Wire Franchises. 710 pp. Engineering News Book Department, New York. Price, \$5.00 net.

The sub-title of this work is "A description of the terms and conditions upon which private corporations enjoy special privileges in the streets of American cities." The work is to be published in two volumes, of which the first has just been issued and the second is expected to appear in about six months. The author is Chief of the Bureau of Franchises of the Public Service Commission for the First District of New York (New York City). He states in his preface that "So far as the writer knows, this volume is the first one to be published having for its subject the analyses and description of municipal franchises as they exist in actual operation in the cities of America. . . . In the volume now presented to the public, the author gives an introductory analysis of the modes of acquiring franchise rights, of the nature of franchises and of the various possible means of restricting public utility monopolies under private operation. . . . After this introductory discussion, the several classes of municipal franchises are taken up in order. In most cases a brief sketch is given of the history and importance of the utility and the special ways in which it is related to the city. Then follows in every case a description of typical franchises in actual operation in different cities of the country. The utilities treated in this volume are electric light and power, the telephone, the telegraph, electrical signals, electrical conduits, water supply, sewerage, central heating, refrigeration, pneumatic tubes, oil pipe lines and artificial and natural gas. For the second volume are reserved the discussion of the various classes of transportation and terminal franchises and the general observations and conclusions in regard to the taxation and control of public utilities."

The first thing which strikes the reader on opening this book is the fact that the whole work is thoroughly sub-divided into chapters and sections along a logical line, which makes it very convenient as a book of reference, the number of sections amounting to 276. As these are all named in the table of contents, the reading of this gives an excellent idea of the entire contents of the book. In addition there is an index occupying 37 pages which appears to be very complete and should add greatly to the value of the work and the ease of finding any or all references to any given subject. For instance, turning at random to the subject of "Compensation for Franchises," we find 186 references. It appears to us that this subdivision into sections, each one numbered and with a heading in black-faced type, has been carried to an unnecessary length in some of the more general portions of the book, such as the introductory chapters, where the headings somewhat interfere with the train of thought which is carried consecutively through several sections. However, this is certainly more than compensated by the convenience of such subdivision in the more technical part of the book, where each section is to a degree a brief treatise on a particular topic.

The chapter headings of Vol. I are as follows: How Franchise Rights are Acquired. What a Franchise Signifies. Monopoly Profits, and Ways of Limiting Them. Injuries to Individuals, and Ways of Preventing Them. Temptations to Public Wrong, and Ways of Overcoming Them. These form the introductory part of the work. The author then takes up Electric Light, Heat and Power as a Public Utility. Franchise Conditions Imposed on Electric Light and Power Companies. The Telephone, Telephone Franchise Regulations. The Telegraph and the Conditions Imposed Upon It by Local Authorities. Messenger and Signal Franchises. Electrical Conduits. Water Works and Water Supply Franchises. Sewer Franchises. Central Heating Franchises. Refrigeration Franchises. Pneumatic Tubes and the Franchises Under Which They Are Operated. Oil Pipe Line Franchises. Artificial and Natural Gas as Public Utilities. Gas Franchises Where Only Artificial Gas is Available. Gas Franchises in Cities within Reach of Natural Gas Fields. Following these is a partial list of the sources used and authorities consulted, these consisting of actual franchises and city charters, articles in various periodicals and Society Proceedings, Census reports, etc.

If the number of the requests which have reached this office, and which we have done our best to reply to individually, is any indication of the extent of the desire for such information as is given in this work, it is one which should be in the

office of at least one public official in every city in the country which has granted franchises, is considering the modification or renewal of franchises or contemplates granting new ones—and this would include, we imagine, practically every municipality in the country. As the author well says, "Every new application for a franchise has found city officials unprepared with the requisite knowledge. Each city has handled franchise questions blindly and with little or no regard to the experience of other cities. Indeed, a city's own experience has seldom been fully available for the guidance of the aldermen."

In general the author has confined himself to stating facts without expressing his opinions on controverted points. An exception is his expressed belief that water works should, as a general thing, be operated by a municipality; and his discussion of that subject is colored throughout by this idea. The method of presentation of the subject by Mr. Wilcox is essentially one for the student or the official who is making a thorough study of the subject, and not for one who desires to find an exact and definite answer to any question which may arise concerning franchises. One does not find here the full text of a franchise labeled "a model franchise" for a light and power company, water company, etc. He will find, however, a statement of the more important points of typical franchises in force in a number of cities, with a discussion of the same, so that he may learn the general principles embodied in some of the best and also some of the poorest franchises. In other words, he may obtain from this work the principles upon which the franchise for his own city may be based, and from these form the skeleton of the franchise, but he must modify by a knowledge of local laws and conditions, and must furnish the flesh thereof with due consideration to minor conditions, possibilities, and even prejudices.

Dust Preventives and Road Binders. By Prevost Hubbard. New York, John Wiley & Sons, 1910. Cloth, 6 by 9 inches, 416 pp. Price \$3.

The author is Assistant Chemist, Office of Public Roads, United States Department of Agriculture and Secretary of the Committee on Road Materials of the American Society for Testing Materials. The purpose of the book is primarily to furnish road engineers with a working knowledge of the characteristic properties of dust preventives and road binders now in use and to develop certain fundamental principles relative to their selection and application. The conclusions presented are based upon experience which the author has acquired both in the laboratory and in the field in the past five years of his service with the Office of Public Roads. An introductory chapter discusses the causes of the origin of dust, the injuries that it does, and the general principles of its prevention by removal, laying or avoiding its formation. The most promising solution, the author says, consists in chemical treatment of the road surface. Binders are classified into temporary, semi-permanent and permanent, according to their effects, and into organic and inorganic, according to their nature. Under the head of inorganic binders the subject of sprinkling with water is included as well as the use of selected stone screenings or clay in connection with the construction of macadam. The use of certain salts such as chloride of calcium is favorably spoken of. A brief chapter is given to organic non-bituminous binders, chief among them sulphite liquors. Nine chapters are devoted to the subject of bituminous road binders, which the author thinks offer the best solution so far found of the problem, and a reasonably satisfactory one. A chapter briefly reviews the chemical theory of hydrocarbons. Another gives their classification. The characteristics of petroleum as they are found in the market for road treatment are reviewed. Characteristics of solid and semi-solid bitumens used for treating roads are described. The surface treatment and construction of earth, gravel and broken stone roads with oil and oil products are next described in considerable detail. The author states that in general the oil asphalt macadam constructed according to the mixing method will in the long run prove the most satisfactory and economical. An expense of from 15 to 25 cents per square yard above the ordinary cost of macadam covers the additional expense. A long chapter is devoted to a description of the characteristics of various tars with relation to the treatment of roads. Comparing tars with asphaltic oils, the author says that the tars weather faster than the oils but that they are stronger binders. The various methods of applying tar and making bituminous macadam roads with tar are given a long chapter fairly well illustrated. The physical and chemical exam-

ination of bituminous road materials and the interpretation of the results are treated at length, apparatus as well as methods being described. Methods of examination proposed or adopted by American societies are stated. The concluding chapter discusses the principles that should govern the selection and specification of dust preventives and road binders and illustrates the principles by specific examples. He says that for dust prevention only a temporary binder or palliative may be used but never with the expectation that it will serve as a permanent binder. On the other hand the permanent binders, while of great value as dust preventives so far as the wear of the road is concerned, cannot be expected to serve as dust layers. While the reader who has kept posted on the current literature of the subject may not find much in the book that is new to him, he will find it valuable as collecting the material in one volume suitable for ready reference. The emphasis which the author puts on the necessity of a fundamental knowledge of the chemical nature of the materials in order that they may be chosen and used intelligently is, perhaps, the most valuable lesson of the book. Altogether it is a volume that the engineer and road builder can hardly afford to be without in the present stage of our knowledge of dust preventives and road binders.

The Quality of the Surface Waters of Illinois. By W. D. Collins. Published by the U. S. Geological Survey, Department of the Interior, Washington, D. C. 94 pages. This publication is Water Supply paper No. 239, one of the series published at frequent intervals and distributed without charge by the Geological Survey.

This report furnishes the means of stating with fair accuracy the quality of water which may be found at any point along the larger streams within or bordering the State of Illinois. It also includes some explanation of the variations in the quality of the water at different times and places. The natural and economic features which determine the character of the streams are considered in a general way. The larger drainage divisions are described briefly. A short account of the distribution of population and principal industries of the State shows how these are affected by the streams and how they influence the quality of water in the streams. Methods of collecting and analyzing samples of water are described. The surface waters of the State were represented by samples taken at 24 different points. Each river is discussed in detail with reference to its source, course, discharge, and quality of water. The cities located on it are considered with reference to their use of and their effect on the water. Short chapters on municipal supplies and industrial uses of water save needless repetition in discussing the value of the water of each river. It is shown that the only large supplies of water in the State are surface waters. Nearly all the surface waters are so polluted as to be unfit for domestic use without purification. They usually contain such dissolved mineral matter and so much suspended material as to be unsuitable for many manufacturing purposes, but by proper treatment they may be rendered safe for drinking and suitable for all industrial uses. The proper purification of surface waters is in the greater part of the State the only way to obtain a large supply of satisfactory water. If in some way the flow of all streams might be regulated and kept more uniform, the increased uniformity in quality of the water would make much easier the problem of proper treatment.

History of Sanitation. By J. J. Cosgrove. Published by Standard Sanitary Manufacturing Company, Pittsburg, Pa. 124 pages. Price \$3.00.

The title of this book is somewhat misleading, in that it refers to water supply and the uses made of it, and the disposal of sewage. It is, as the title states, a history rather than a technical work. As a history it is by no means complete, but confines itself largely to the earliest known instances and methods of supplying water and handling sewage, followed by the latest appliances for the same purposes. It is written in a very careless way, quite a number of sentences and even paragraphs being repeated verbatim on different pages, and one full-page illustration appears twice. It is profusely and quite artistically illustrated, but a typical example of the general literary style is furnished by the opening and closing sentences, the former being "History repeats itself. The march of progress is onward, ever onward, but it moves in cycles," and the conclusion, "Time alone will tell." The descriptions of early and crude methods of obtaining water, ancient baths, etc., are interesting, and the book may well entertain, for an hour or two, those not already familiar with the subject dealt with.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Ohio	Dayton	July 29, noon	Paving 36,345 sq. yds. curb, etc., 6 streets, any material	J. C. Ely, Dir. Pub. Service.
Indiana	South Bend	July 29, 10 a.m.	Grading So. Mich. st., from Ewing ave. to Leefer road	Otto C. Bastian, Clk. Bd. Pub. Wks.
Ohio	Cincinnati	July 29, noon	Resurfacing Reading pike in Sycamore, Cleves-Dugan Gap road in Miami, and Hill road, Colerain township	Stanley Struble, Pres. Co. Comrs.
Utah	Salt Lake City	July 29, noon	Paving, curb and gutter, Exten. No. 67, 2d West st.	H. G. McMillan, Chm. Bd. Pub. Wks.
Ohio	McArthur	July 29, noon	Grade and water-bound macadam 2.80 miles road, \$12,177	St. Hwy. Comr. C. of Co. Comrs.
Minnesota	Nashauk	July 29, 2 p.m.	Paving Central ave., any material: Duluth Eng. Co., Duluth	John H. Carlson, Village Clerk
Virginia	Boyce	July 29	Bldg. 2 miles macadam road from Old Chapel to Boyce	State Hwy. Comr., Richmond
Ontario	Collingwood	July 30	Brick or bituminous paving on concrete, 3,630 sq. yds.	K. S. MacDonnell, Town Engineer
Illinois	Chicago	July 30	Improving brick pavements on various streets	B. J. Mullaney, Comr. Pub. Wks.
Iowa	Sioux City	July 30, 9 a.m.	Bldg. 4-ft. cement sidewalks on 9 streets	E. O. Wesley, Supt. Sts. & Pub. Imp.
Kansas	Ft. Leavenworth	July 30, 11 a.m.	Bldg. roads, walks, etc., at fort	Capt. Wm. D. Davis, Q. M.
Wisconsin	Racine	July 30, 10 a.m.	Asphalt paving, 10,371 sq. yds.; comb. curb and gut. 5,547 ft.	P. H. Connolly, Chm. Bd. Pub. Wks.
Montana	Ft. Missoula	July 30, 9 a.m.	Bldg. concrete sidewalks and curbs in fort	A. B. Shattuck, Constr. Q. M.
Illinois	East St. Louis	July 30, noon	Brick paving, 8,420 sq. yds. on 6-in. concrete and 2-in. sand cushion, 4,860 ft. 5x20-in. sandstone curb, sewers, excav., etc.	W. J. Crocken, City Engineer
Ohio	McCutchenville	July 30, 2 p.m.	Piking 19.187 ft. of road in Seneca Township	H. V. Helmrick, Clk. Seneca Twp.
Illinois	Decatur	Aug. 1	Vit. block paving on 4-in. concrete, 7,975 sq. yds.; \$18,156	A. B. Alexander, City Engineer
Florida	St. Augustine	Aug. 1, 9 a.m.	Bldg. public highway	C. M. Milburn, County Engineer
Indiana	Danville	Aug. 1	Bldg. 14,560 lin. ft. road, Union; 9,341 ft. Washington twp.	Wm. N. Nichols, County Auditor
Indiana	Vernon	Aug. 1	Bldg. 2.5 miles gravel road in Campbell twp.	T. L. Thomas, County Auditor
Indiana	Huntington	Aug. 1	Bldg. highway on line between Union and Rock Creek twps.	John W. Weaver, County Auditor
Indiana	Jeffersonville	Aug. 1	Grading, draining, graveling 3,607 miles Brownstown road	Peter Nachaud, County Auditor
Illinois	Colona	Aug. 1	Bldg. 1,350 ft. concrete sidewalks	Sidewalk Com. of City Council
Illinois	Decatur	Aug. 1	Vit. block on 4-in. concrete, 7,975 sq. yds.; cost, \$18,156	A. B. Alexander, City Engineer
New York	Albany	Aug. 1, 1 p.m.	Bldg. 10.22 miles, 8 roads, also repair, etc., 4 roads	S. P. Hooker, Chm. State Hwy. Com.
Indiana	Bluffton	Aug. 1, 2 p.m.	Bldg. 3 macadamized roads	O. D. Garrett, County Auditor
Indiana	Salem	Aug. 1, 1:30 p.m.	Paving 14 streets with vit. brick	Sam'l. G. Ellis, County Auditor
Iowa	Council Bluffs	Aug. 1, 5 p.m.	Paving 5,252 sq. yds. oblong trap block, curb, corners, etc.	A. W. Casady, City Clerk
New Jersey	Elizabeth	Aug. 1, 8:30 p.m.	Paving and curbing 3 blocks with vit. brick	N. K. Thompson, Street Comr.
Minnesota	Winona	Aug. 1	Bldg. macadam road, 3 miles, gravel 2 miles long	Paul Jasmer, City Recorder
Indiana	Kentland	Aug. 1	Bldg. pike road in Campbell twp.	E. R. Bringham, County Auditor
Indiana	Vernon	Aug. 1, 11 a.m.	Tar macadam, 12,142 sq. yds., curb and gutter, 6,632 lin. ft.	T. L. Thomas, County Auditor
Wisconsin	Waukesha	Aug. 1, 8 p.m.	Grading and paving 4 sections of avenues	M. R. Butler, City Clerk
New York	Bronxville	Aug. 1	Concrete paving, 19,000 sq. yds. curb, etc., Hall & Adams, Engrs.	Frank Dinsmore, Village Clerk
Iowa	Hampton	Aug. 1	Clearing, grubbing, grading No. Trunk road	City Clerk
Washington	Everett	Aug. 1, 10 a.m.	Bldg. wagon road, 36½ miles long	P. T. Lee, County Auditor
Montana	Bozeman	Aug. 1	Grading 5 miles of city streets	W. E. Brandenburg, County Clerk
Mississippi	Moss Point	Aug. 1	Paving, curbing, grading, etc.; contracts	C. M. Fairley, City Clerk
Ohio	Norwood	Aug. 1, noon	Bldg. all street crossings until May 1, 1911	H. D. Armstrong, Clk. Dir. Pub. Ser.
South Dakota	Redfield	Aug. 1, 8 p.m.	Constructing sidewalks	H. T. Patch, City Auditor
Kansas	Ness City	Aug. 1	Paving Poppen Hill, 7-12 miles north of city	H. F. Williams, City Clerk
Kansas	Downs	Aug. 2	Grading work to cost \$15,000	Ralph Rhodes, Sec'y.
Illinois	Charleston	Aug. 2	Brick paving Marietta st., 1,975 sq. yds., ex. of car tracks, \$17,600	A. B. Alexander, City Engineer
Illinois	Decatur	Aug. 2, 2 p.m.	Bldg. 3½ miles macadam road	P. St. J. Wilson, Hwy. Comr., Rich'd.
Virginia	Wytheville	Aug. 2	Bldg. Philips and Sheron stone roads, 15,485 and 10,753 ft. long	A. T. Stout, County Auditor
Indiana	Marion	Aug. 2	Bldg. macadam road in Brown township	B. B. Engle, County Auditor
Indiana	Crawfordsville	Aug. 2	Grading, draining and imp. Clare Connelly rd., Washington twp.	H. A. Henderson, County Auditor
Indiana	Rockville	Aug. 2	Bldg. 4 gravel roads, Beaver twp., 12½ mi. long, 6 Cass, 17 mi. l'g	Ellis S. Ries, County Auditor
Mississippi	Winamac	Aug. 2	Constructing sidewalks in town	R. W. Garrison, Mayor
Indiana	Leland	Aug. 2, noon	Bldg. 4 gravel roads, different townships	J. P. Nottzger, County Auditor
Indiana	Wabash	Aug. 2, 10 a.m.	Bldg. fill macadam road, Stockton Township	P. M. Cook, County Auditor
Indiana	Bloomfield	Aug. 2	Bldg. 13,000 sq. yds. cement sidewalks: H. D. Shaw, City Engr.	N. D. Goodwin, City Clerk
Mississippi	Gulfport	Aug. 2, 8 p.m.	Bldg. gravel roads in Grelen and Gregg townships	B. E. Thornburg, County Auditor
Indiana	Martinsville	Aug. 2	Improving 5.39 miles, Malaga road, Landis twp.: earth excav.	
New Jersey	Bridgeton	Aug. 2, 2 p.m.	16,480 cu. yds., grub .33 acre, compacted gravel, inc. wings, 9,332 cu. yds., bridges, etc.; W. M. Sharp, County Engineer	Benj. Erickson, Bd. Freeholders
Indiana	Vincennes	Aug. 2, 2 p.m.	Bldg. 8,097 ft. gravel roads	J. T. Scott, County Auditor
New York	Binghamton	Aug. 3, 4 p.m.	Bldg. vit. brick pavement, Henry and Court streets	S. W. Murray, Clk. Bd. C. & Sup.
Michigan	Holland	Aug. 3, 7:30 p.m.	Brick paving 1,200 yds. on 6-in. conc., 4,600 ft. curb and gutter	H. A. Nabehuis, City Engineer
Pennsylvania	Pittsburg	Aug. 3, noon	Permanent improvement of 4 county roads, 7 miles long	S. D. Foster, County Road Engineer
New York	Binghamton	Aug. 3	Paving Court st. with brick	J. A. Giles, City Engineer
Pennsylvania	Reading	Aug. 3, 2 p.m.	Vit. block paving, 23,000 sq. yds., granite 3,500 sq. yds.	E. B. Ulrich, City Engineer
Iowa	Villisca	Aug. 3, 8 p.m.	Paving 20,542 sq. yds. curb, 1,818 ft. grading in cut, 3,000 yds., brick, 24% rattler and 3% absorb. test	
Maryland	Rider	Aug. 3	Grading, draining, bridging, etc., 6,000 ft. Dennis ave.	Theo. S. DeLay, Engr.-in-Charge.
Ohio	Newark	Aug. 4, noon	Grade and water-bound macadam 2.71 miles, \$19,232; 1 mile, \$3,662	John M. Dennis
California	Oakland	Aug. 4, 2 p.m.	Bldg. asphalt roadway in Lakeside Park; \$10,000 bond	St. Hwy. Comr. C. of Co. Comrs.
Ohio	Dayton	Aug. 4, 10 a.m.	Grading and macadamizing 2.64 miles Xenia Pike	Henry F. Vogt, Sec'y Park Com.
New Jersey	Vincentown	Aug. 4, 11 a.m.	Bldg. stone road from Smalley's Corner, So. Pemberton	Frank Munger, Chm. Co. Comrs.
New Jersey	New Brunswick	Aug. 4, 11 a.m.	Grading cut-off of Donnell's Hill, No. Brunswick township	Wm. T. Joyce, Clk. South Twp.
Alabama	Ft. Morgan	Aug. 5, 1:30 p.m.	Bldg. brick paved road and cement walks	P. H. S. Hendricks, Dir. Freeholders
Georgia	Clarksville	Aug. 5, 8 p.m.	Bldg. 9,000 sq. yds. brick or cement walks, 8,000 sq. yds. macadam paving, 6,000 lin. ft. conc. curb and gutter	Lt. E. F. Barlow, Constr. Q. M.
Indiana	East Chicago	Aug. 5	Improving 5 streets; costs \$43,571, \$27,533, \$49,921, \$31,385 and \$43,571; also 20 miles cement sidewalk	J. H. Hicks, Mayor
Kansas	Ft. Scott	Aug. 5	Bldg. 22 miles of Kansas City-Ft. Scott road	C. K. Wallace, City Engineer
Indiana	Marion	Aug. 5	Improving 2 miles of roads	City Commissioners
Ohio	Cincinnati	Aug. 5, noon	Improving extension of Struble road, Col. & Springfield twps.	F. Wilson, County Engineer
Ohio	Canton	Aug. 5, 10 a.m.	Brick paving, grading, draining, 2.54 miles, Sugar Creek twp.	Fred Dreihls, Clk. Co. Comrs.
Ohio	Mt. Gilead	Aug. 5, 11 a.m.	Improving Gilead Road No. 3	J. H. McConnell, County Auditor
Kansas	Junction City	Aug. 5, 3 p.m.	Bldg. cement sidewalks in E. 8th and W. Chestnut streets	Clifton Spee, County Auditor
Indiana	Frankfort	Aug. 6, 2 p.m.	Bldg. 15 gravel roads, postponement from July 9	John G. Pease, City Clerk
Wisconsin	Antigo	Aug. 6, 2 p.m.	Paving with macadam, 4 city blocks	C. F. Cromwell, County Auditor
Louisiana	Alexandria	Aug. 6	Brick paving Gould ave., 11th to Levin sts. gravel on to city line	G. O. Palmeter, City Clerk
Indiana	Indianapolis	Aug. 6, 10 a.m.	Repairs to Cumberland gravel road; bldg. 7 culverts	I. W. Sylvester, City Engineer
Indiana	Tipton	Aug. 6	Bldg. 5 gravel, stone or macadam roads, 20,234 ft. long; \$12,846	Albert Sahn, County Auditor
New Jersey	Trenton	Aug. 9, 2:30 p.m.	Macadamizing, etc., Rocky Hill road, Princeton township	Board of County Commissioners
Alabama	Decatur	Aug. 9, 10 a.m.	Grade, drain, macadam, 4 roads, 5.5, 1.5, 3 and 4.5 miles long	J. Mason Ege, Dir. Bd. Freeholders
Indiana	Winamac	Aug. 9	Improving 5 public highways	J. T. Bullen & R. P. Boyd, Co. Engrs.
Florida	Pensacola	Aug. 10, noon	Bldg. 525,000 sq. ft. concrete sidewalks	Ellis S. Ries, County Auditor
Texas	Sherman	Aug. 10, 11 a.m.	Bldg. 65 miles macadam roadway in Dist. No. 1	L. Earle Thornton, City Engineer
Kansas	Olathe	Aug. 10	Bldg. Kansas City-Olathe rock road, 18 miles long	H. R. Wallace, County Auditor
New Jersey	Salem	Aug. 10, 10:30 a.m.	Grading and gravel surface, 1.78 miles, Elmer Boro. road	Bd. Comrs. of Johnson County
New Jersey	Merchantville	Aug. 10, 11 a.m.	Bldg. Amiesite road in Chapel ave., 14 ft. by .85 mile	Harry P. Gray, Dir. Bd. Freehold.
Ohio	Cleveland	Aug. 10, 11 a.m.	Grade, drain, improve, Broadvi w road No. 4 to city line	J. I. Albertson, Co. Engr., Salem.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS (Continued)				
West Virginia	Fayetteville	Aug. 10	Road work; postponed from July 1	Henry A. Gentry
Texas	Galveston	Aug. 11, noon	Paving Scott street road	John B. Ashe, County Auditor.
Ohio	Akron	Aug. 11, 11 a.m.	Grading, draining and improving Kenmore road; \$1,000 check.	Chas. L. Wirth, Clk. Co. Comrs.
Indiana	Ft. Wayne	Aug. 11, 7:30 p.m.	Paving 7 streets; Frank Randall, City Engineer	Frank T. Benoy, Chm. Bd. Pub. Wks.
West Virginia	Huntington	Aug. 11, noon	Brick paving Maple ave., 26th st. and alley; also sewers.	John Coon, Supt. of Streets.
Kansas	Ft. Riley	Aug. 11, 10 a.m.	Bldg. 6,600 sq. yds. macadam, 3,900 ft. concrete driveway and curb, 8,000 ft. concrete walks, 950 sq. ft. conc. crossing, 4,500 cu. yds. grading; 500 ft. 12-in. and 200 ft. 10-in. culvert pipe, 6 concrete catch basins, etc.	Capt. W. M. Whitman, Constr. Q. M.
Ohio	Cincinnati	Aug. 12, noon	Shaping up Reading pike ready for oiling, Sycamore twp.	Fred Dreihls, Clk. Co. Comrs.
Ohio	Columbus	Aug. 12, 2 p.m.	Macadamizing Hilliard-Dublin road improvement	John Scott, Clk. Co. Comrs.
Maine	Ft. McKinley	Aug. 15, 10 a.m.	Bldg. service road, grading, etc., at fort.	Capt. Jas. F. Cohn, Constr. Q. M.
Illinois	Decatur	Aug. 15	Brick paving on concrete, 2 streets; cost, \$27,000.	A. B. Alexander, City Engineer.
Maryland	Ft. Howard	Aug. 15	Bldg. macadam roads, concrete walks, etc., at fort.	Constructing Quartermaster.
New Jersey	Montvale	Aug. 15	Grading and macadamizing 2.205 miles road	F. C. Lindeman, Mayor.
New York	Albany	Aug. 16	Paving and curbing Vine street	W. Greenalch, Comr. Pub. Wks.
Ohio	Toledo	Aug. 17, 10 a.m.	Grading, draining, macadamizing Point Place road	Chas. J. Sanzenbacher, Co. Auditor.
SEWERAGE				
Minnesota	Minneapolis	July 29	Furn. 20,000,000-gal. cent., also vert. trip. expan. pump. engine.	H. N. Knott, City Clerk.
Montana	Ft. Missoula	July 30, 9 a.m.	Bldg. sewer system at fort.	A. B. Shattuck, Constr. Q. M.
Illinois	East St. Louis	July 30, noon	Bldg. 318 ft. 24-in., 2,274 ft. 15-in., 2,500 ft. 12-in. sewer pipe; 10 c.-i. manhole covers, 7 inlets, paving, curb, etc.	F. B. Hanna, Clk. Bd. Loc. Imp.
Ohio	Galion	Aug. 1, noon	Bldg. sanitary sewer laterals in all of Dists. 7, 8 and 9 and portions of 1, 2, 3, 5 and 6; 36,812 ft. 4-in., 4,434 ft. 6-in., 43,446 ft. 8-in., 1,472 ft. 10-in., 435 ft. 12-in., 2,412 ft. 15-in. vit. sewer pipe, 42,441 cu. yds. excav., 192 manholes; 1.46 tons specials, small quantity, c.-i. pipe, etc.	Ed. C. Vochem, Clk. Dir. Pub. Serv.
Illinois	Danville	Aug. 1	Bldg. 1,600 ft. 8-in. vit. pipe sewers; 5 manholes, one flush tank.	W. E. Winn, City Engineer.
Illinois	Hoopeston	Aug. 1	Bldg. \$65,000 sanitary sewer system; Fr. Payne, C.E., Danv.	H. C. Findley, Mayor
Georgia	Sylvania	Aug. 1	Constructing sewer system	A. B. Lovett, Mayor.
California	Colton	Aug. 1	Bldg. \$60,000 sewer system, flush tanks, manholes, etc.	W. L. Brown, City Engineer.
New Jersey	New Brunswick	Aug. 1	Bldg. sewers in 2 streets, curb and gutter, Hale street	Fred C. Schneider, City Surveyor.
New York	Elmira	Aug. 1, 10:30 a.m.	Bldg. 1,225 ft. sewer in 6 streets	Otis H. Gardner, City Clerk.
Indiana	Hammond	Aug. 1, 10 a.m.	Bldg. 18-in. sewer in Wabash ave., Gostlin to 142d street	A. R. Ebert, Pres. Bd. Pub. Wks.
Indiana	Kokomo	Aug. 1, 10 a.m.	Bldg. Milner sewer; J. L. Puckett, Chm. Bd. Pub. Wks.	Ben Havens, City Clerk.
Pennsylvania	Monongahela	Aug. 1, 4 p.m.	Bldg. 485 ft. 8-in. terra cotta sewer, etc.	C. C. Hanlon, City Engineer.
South Dakota	Redfield	Aug. 1, 8 p.m.	Bldg. sewers in sundry streets	H. T. Patch, City Auditor.
Missouri	St. Joseph	Aug. 2, 2 p.m.	Sewer work, including purification works.	W. B. Hazen, C. E., of Court House.
Nevada	Winnemucca	Aug. 2	Bldg. sewer system in city	C. W. McDied, Clk. Bd. Co. Comrs.
Texas	Beaumont	Aug. 2, 10 a.m.	Bldg. sewer extensions: 100 ft. 27-in. pipe, 1,140 ft. 24-in., 1,080 ft. 18-in., 3,445 ft. 15-in. pipe, 1,600 ft. 3.5x3-ft. concrete, 1,500 ft. unknown size brick or concrete; C. L. Scherer, C. E.	J. G. Sutton, City Secretary.
Kansas	Horton	Aug. 2, 8 p.m.	Bldg. main sewer and 22 laterals	B. B. Norris, City Clerk.
Pennsylvania	Nanticoke	Aug. 2, 7 p.m.	Bldg. 1,500 ft. sewer in Noble st. and alley near Church st.	C. L. Fairchild, Pres. Town Council.
Pennsylvania	Glen Lyon	Aug. 3, 7 p.m.	Bldg. 1,200 ft. sewer in Glen Lyon Village	Jos. Olszewski, Twp. Sec'y., Alden.
Iowa	Hawarden	Aug. 3	Bldg. 18,400 ft. 8 to 12-in. vit. pipe sanitary sewers	T. J. Reeves, City Clerk.
New Jersey	Ventnor City	Aug. 3, 8 p.m.	Constructing sewage disposal works	W. I. Risley, City Engineer
New York	Binghamton	Aug. 3, 4 p.m.	Bldg. sewer in Alice st.	S. W. Murray, Clk. Bd. Sup. & Cont.
Rhode Island	Woonsocket	Aug. 4, 2 p.m.	Bldg. 3,600 ft. 8-in. sanitary sewer, also 660 ft. surface water drain, part 18-in. pipe and part concrete.	Frank H. Mills, City Engineer.
Kentucky	Louisville	Aug. 5, noon	Bldg. Sec. A, Western Interceptor, Contract 72: 3,239 ft. 5-ft. rein. concrete sewer, av. cut, 19.1 ft., inc. 1,450 cu. yds. concrete, 67,000 lbs. steel, 3,239 ft. earth excav.	P. L. Atherton, Chm. Sewer Bd.
New Jersey	Madison	Aug. 8, 8 p.m.	Bldg. 12 miles 8 to 18-in. sewer flush tank, ejector station, etc.	Hering & Fuller, 170 Bwy. N. Y. City
Ohio	Cleveland Hgts.	Aug. 9, noon	Bldg. sewers, water mains, etc.; F. A. Pease Eng. Co., Cleveland	H. H. Canfield, Village Clerk.
California	Pasadena	Aug. 9, 11 a.m.	Bldg. rein. concrete storm water sewer; cost, \$155,000	Herman Dyer, City Clerk.
Indiana	Ft. Wayne	Aug. 11, 7:30 p.m.	Bldg. main sewer in alley from Darrow street	H. W. Becker, Clk. Bd. Pub. Wks.
West Virginia	Huntington	Aug. 11, noon	Bldg. sewers in 2 streets and 3 avenues; brick paving	A. B. Maupin, City Engineer.
Florida	St. Petersburg	Aug. 11, 7 p.m.	Furn. and lay or lay only 1,800 ft. 16-in. c.-i. flange outlet sewer pipe in Tampa Bay; M. W. Spencer, City Engineer	W. F. Divina, City Clerk.
New York	Rochester	Aug. 13, 10 a.m.	Bldg. sewage disp. plant, etc., new Tuberculosis Hospital	Thos. J. Bridges, Chm. Co. Bldg. Com.
Iowa	Battle Creek	Aug. 15	Bldg. \$7,000 sewer system, of 6, 8 and 12-in. vit. pipe	E. E. Carlson, Engineer.
Illinois	Danville	Aug. 15	Bldg. \$28,000 vit. pipe storm water sewer system in Germantown	Walter Wynn, City Engineer.
Wisconsin	West Allis	Aug. 15	Bldg. 24,000 feet of sewers	L. F. Fish, City Clerk.
South Dakota	Groton	Aug. 15, 8 p.m.	Bldg. sewer extension	A. P. Fuller, City Auditor.
Iowa	Ft. Madison	Aug. 20	Bldg. 10,000 ft. sanitary sewer; cost, \$8,000	M. E. Bannon, City Engineer.
Texas	Ft. Crockett	Aug. 22, 2 p.m.	Bldg. sanitary sewer system and pumping plant	Capt. P. Whitworth, Q. M.
WATER SUPPLY				
South Carolina	Ft. Moultrie	July 29	Bldg. 3 rein.-conc. reservoirs and water distributing system	Constructing Quartermaster.
Minnesota	Minneapolis	July 29, 7:30 p.m.	Furnishing 20,000,000-gal. electric-driven pumping engine, also vertical triple-expansion pumping engine	Henry N. Knott, City Clerk.
Ontario	London	July 29	Furn. two 3,000,000-gal. turbine pumps, 250-ft. head, 750 r.p.m., two 250-h.p. motors, dir.-con. exciters, 2 transformers, switchboard, etc.	O. Ellwood, Sec'y Water Comrs.
Kentucky	Louisville	July 30	Cleaning out mud from both sections of Crescent Hill reservoir and concreting bottom of both basins	Theo. A. Leisen, Ch. Engr. W. W.
North Dakota	Casselton	July 30	Bldg. a concrete or brick reservoir	B. D. Youells, City Auditor.
Montana	Ft. Missoula	July 30	Bldg. water distributing and sewer system, rein. concrete pumping station, furn. and install. all boilers, valves, etc.	A. B. Shattuck, Constr. Q. M.
Kansas	Ft. Leavenworth	July 30, 11 a.m.	Bldg. water mains, meters, etc., at fort.	Capt. Wm. D. Davis, Q. M.
Iowa	Sioux City	July 30, 9 a.m.	Bldg. 800 ft. 4x5x8 ft. tunnel and placing 800 ft. 16-in. c.-i. suction pipe; bids on brick and concrete	K. C. Gaynor, City Engineer.
Illinois	Winnetka	July 30, 1 p.m.	Laying 20-in. intake pipe 3,000 ft. into Lake Michigan	Village Clerk.
Wisconsin	Delavan	July 30, 11:30 a.m.	Excav. and filling water main ditches	O. R. Rice, City Clerk.
Minnesota	Eden Valley	July 30, 8 p.m.	Bldg. 280 ft. 6-in. c.-i. water main, 2 Watrous hydrants, 2 Ts, 2 crosses, three 6-in. valves and boxes, cocks, etc.	W. R. Salisbury, Village Clerk.
Illinois	Beecher	Aug. 1, 8 p.m.	Digging or driving 10-in. well; J. E. Pickens, C.E., Kankakee	W. F. Myrick, Village Clerk.
Ohio	Cincinnati	Aug. 1, noon	Installing water service at Westwood Commons	M. C. Longenecker, Sec'y Park Bd.
Ohio	Norwood	Aug. 1, noon	Constructing water mains	H. D. Armstrong, Clk. Dir. Pub. Serv.
Ohio	Napoleon	Aug. 1, noon	Changes and extensions to water works and light plant	M. V. Meekinson, Sec'y Bd. Trus.
Wisconsin	Marshfield	Aug. 1, noon	Laying 600 ft. 6-in. water pipe, hydrants, etc.	M. G. Fleckenstine, City Clerk.
Iowa	Chariton	Aug. 1, 1:30 p.m.	Bldg. water mains	C. J. Gittinger, City Clerk.
South Dakota	Redfield	Aug. 1, 8 p.m.	Laying water mains in various streets	H. T. Patch, City Auditor.
Montana	Lewiston	Aug. 1	Furn. 60,000-lb. car of 4-in. c.-i. hub or spigot 100-lb. pressure water pipe	H. P. Imislund, City Clerk.
Massachusetts	Chelsea	Aug. 1	Laying 3,080 ft. 36-in. and 730 ft. 30-in. water main	Met. Sewer & Water Bd., Boston.
Illinois	East Dundee	Aug. 1, 7:30 p.m.	Furn. and laying 9,650 ft. 6-in., 3,190 ft. 4-in. c.-i. pipe, 30 hydrants, 23 six and 5 four-in. valves, boxes, specials, etc.	Lewis R. Barrett, Pres. V. I. Bd.
Texas	San Antonio	Aug. 1	Boring an artesian well with prospect of others	C. A. Davies, Frost Bank Bldg.
Georgia	Sylvania	Aug. 1	Bldg. water works	A. B. Lovett, Mayor.
Wyoming	Cheyenne	Aug. 1	Hauling and laying 10 miles pipe line, furn. cement for dams	C. C. Carlisle, City Engineer.
Massachusetts	Saugus	Aug. 1, 8 p.m.	Furn. and laying 12,700 ft. 6, 8 and 10-in. standard c.-i. pipe, gate valves, etc.	Geo. Quarmby, Chm. Selectmen.
Virginia	Lynchburg	Aug. 1, 10 a.m.	Bldg. 5,000 ft. 4-in. water pipe line, 700 ft. under James river, to mains of city for Epileptic Colony	Dr. A. S. Priddy, St. Epileptic Col.
Minnesota	Bird Island	Aug. 2	Water main extensions	J. F. Curran, Village Recorder.
Iowa	Cherokee	Aug. 2	Sinking 6, 8 or 10-in. well at city pumping station	Wm. Shardlow, City Clerk.
Kansas	Wilson	Aug. 2	Furn. material and building water works and electric light plant; G. P. Taylor, C. E.	N. Coover, City Clerk.
Ohio	Salem	Aug. 2, noon	Constructing water basin	C. R. Baker, Clk. Dir. Pub. Serv.
New York	Buffalo	Aug. 2, 11 a.m.	Removing 2 fan housings and enlarging boiler breeching in south boiler house of Mass. ave. pumping station	F. G. Ward, Comr. Pub. Works.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
WATER SUPPLY—(Continued)				
Colorado	Castle Rock	Aug. 3, 7 p.m.	Rebuilding 3,500 lin. ft. 8-in. iron pipe	T. Christensen, Town Clerk.
Alabama	Attalla	Aug. 4, 7 p.m.	Bldg. w. w. station, filters, mach. and extensions to system	Hazlehurst & Anderson, Engineers.
Texas	Ft. Sam Houston	Aug. 4, 11 a.m.	Bldg. smoke stack 85 ft. high for pumping and ice plant	P. W. Guiney, Constr. Q. M.
Alabama	Gadsden	Aug. 4, 7 p.m.	Water works station, filters, machinery and extensions	W. T. Murphy, Mayor.
Nebraska	Orleans	Aug. 5, 7 p.m.	Bldg. w. w. system, brick pump. sta.; 12x80 ft. steel standpipe on concrete base; 25 h.p. gaso. engine, pipe con. and belt, 3 miles 8, 6 and 4-in. c.-i. mains, hydrants, etc.	J. C. Gay, City Clerk.
California	Ft. Barry	Aug. 6, 11 a.m.	Bldg. reservoir, wooden tank and extending mains	Maj. G. McK. Williamson, Q. M.
Ohio	Cleveland Hgts.	Aug. 9, noon	Laying 10-in. main in Cedar road; F. A. Pease Eng. Co., Clevel'd.	H. H. Canfield, Village Clerk.
South Dakota	Edgemont	Aug. 10, 10 a.m.	Boring artesian well and piping with 2,900 ft. 4 and 5-in. pipe	C. A. Hardy, City Auditor.
Florida	Key West	Aug. 15, noon	Furn. 2 stand. Scotch stat. boilers and one condenser	Wm. R. Porter, Chm. Bd. Pub. Wks.
Ohio	Euclyd	Aug. 22, noon	Bldg. 6-in. water main in Lawnview ave.	Nelson J. Brewer, Village Clerk.
New York	Keeseville	Aug. 25, 7 p.m.	Furn. 450 pieces 10-in. B. & S. c.-i. pipe, class C, 850 lbs. per length; 11,000 lbs. pig lead, 1 ton specials, 1 stand. m. h. frame and cover, 22-24-in.; two 10-in. and one 4-in. gate valves and boxes; one 10x24-in. copper strainer; laying 5,300 ft. 10-in. pipe, etc.; rock excav. in reservoir, 1,604 cu. yds.; concrete in reservoir, 345 cu. yds., in manhole, 5.28 cu. yds.; 3,200 brick in manhole; 250 lbs. sundry iron work; W. G. Stone, Mann Bldg., Utica, Engr.	J. B. Mace, Pres. Water Bd.
BRIDGES				
Ohio	Lima	July 29	Bldg. bridge over Ottawa river at Pine st.; 2 designs	A. Methaney, City Engineer.
Illinois	Mt. Carroll	July 30, 1 p.m.	Bldg. 3 conc. bridges	S. A. Keim, Town Clerk.
Nebraska	Lincoln	July 30, 2 p.m.	Bldg. concrete bridges and culverts	H. E. Wells, County Clerk.
Illinois	Springfield	July 30	Bldg. concrete bridge over creek, 147 ft. span, 20 ft. roadway	Co. Comrs., C. of Jas. Riley.
Ohio	Bowling Green	Aug. 1	Bldg. sub. and superstructure of two 34-ft. bridges	Board of County Commissioners.
Indiana	Rensselaer	Aug. 1, noon	Bldg. 3 bridges in Milroy, 3 in Walker and 1 in Wheatfield twp.	James Leatherman, County Auditor.
Indiana	Greenfield	Aug. 1, 10 a.m.	Bldg. 2 steel and concrete bridges	C. H. Troy, County Auditor.
Indiana	Fowler	Aug. 1	Bldg. 6 bridges in Pine Township	Lemuel Shipman, County Auditor.
Kansas	Leavenworth	Aug. 1, noon	Bldg. 2 rein. concrete culverts	J. W. Niehaus, County Clerk.
Ohio	Warren	Aug. 1, 1 p.m.	Bldg. superstructure of bridge over creek, Green township	Fred T. Stone, County Auditor.
Texas	Dallas	Aug. 1	Bldg. rein. concrete arch viaduct, 4,870 ft. long between abutments, approaches 500 ft. long	G. L. Fearn, County Auditor.
Ohio	Akron	Aug. 1, 11 a.m.	Repair of Canal and River Bridge at Peninsula	Chas. L. Wirth, Clk. Co. Comrs.
Ohio	Barberton	Aug. 1, noon	Bldg. viaduct over Erie tracks; city's share, \$30,224	H. W. Alcorn, City Engineer.
North Carolina	Laurinburg	Aug. 1	Bldg. 7 rein. concrete arch bridges, five 30-ft. and two 14-ft. spans; four 16-ft. and three 12-ft. roadways	M. L. John, Twp. Rd. Comr.
Ohio	Jefferson	Aug. 1, 1 p.m.	Bldg. west abut. of bridge over Grand river at Cold Springs	A. V. Hilley, Clk. Co. Comrs.
Indiana	Bluffton	Aug. 1, 2 p.m.	Bldg. double 40-ft. span rein. concrete arch	O. D. Garrett, County Auditor.
New York	Brant	Aug. 1, 1 p.m.	Bldg. deck beam bridge, 30 ft. clear span, 18 ft. roadway, over Beaver Meadow Brook, Taft road; concrete, etc.	Frank T. Lehley, Town Clerk.
California	Santa Barbara	Aug. 1	Bldg. \$43,000 bridge at San Lucas	County Clerk.
Indiana	South Bend	Aug. 1, 11 a.m.	Bldg. 1-beam bridge, Centre twp.; repair brick arch, Liberty	John W. Harbou, County Auditor.
Oklahoma	Wagoner	Aug. 1	Bldg. 2 bridges	G. W. Sleeper, Co. Comr.
Ohio	Lima	Aug. 2	Bldg. bridge over Hog Creek	C. R. Phillips, Clk. Co. Comrs.
Indiana	Paoli	Aug. 2	Bldg. bridge at Johnson's ford	A. B. Ham, County Auditor.
Indiana	Danville	Aug. 2, 10 a.m.	Bldg. bridges, arches and walks	Wm. H. Nichols, County Auditor.
Indiana	Brazil	Aug. 2, 11:30 a.m.	Bldg. steel bridge with concrete abutments	J. L. Burnes, County Auditor.
New Jersey	Bridgeport	Aug. 2, 2 p.m.	Bldg. arch bridge, Burnt Mill Stream; 10 ft. addition to bridge at Black Water Stream; box culvert 2.5x30 ft.	Walter M. Sharp, County Engineer.
Ohio	Sylvania	Aug. 2	Bldg. sub. and super. bidder's plans, Division st. bridge	Chas. J. Sanzenbacher, County Aud.
New York	Oswego	Aug. 2	Bldg. joint city and county bridge over river at Bridge st.	John Smith, Comr. Pub. Wks.
New York	Wellsburg	Aug. 2	Bldg. concrete bridge, also steel bridge with conc. floor, Lowman	Town Bd., C. of C. L. Straight.
Indiana	Corydon	Aug. 2, 2 p.m.	Repairing bridge over Big Indian creek	Wm. Taylor, County Auditor.
Ohio	Lima	Aug. 2, noon	Bldg. Fitter Quarry bridge over Hog creek in Bath township	C. R. Phillips, Clk. Co. Comrs.
Indiana	Brownstown	Aug. 2, 1 p.m.	Erection of 7 bridges	H. W. Walker, County Auditor.
Maryland	Baltimore	Aug. 3, 11 a.m.	Bldg. concrete steel bridge over Stony river, Wyman Park	Bd. of Awd's, C. of City Register.
Indiana	Muncie	Aug. 3	Bldg. 3 rein. concrete arches; H. V. Moore, County Engineer	J. E. Davis, County Auditor.
New York	Champlain	Aug. 3, 2 p.m.	Bldg. abutments, Coopersville Hwy. bridge	Wm. Broder, Town Clerk.
Missouri	Carthage	Aug. 3, 1:30 p.m.	Bldg. 6 county bridges	Wm. Kohlman, County Engineer.
New York	Rochester	Aug. 3	Bldg. new concrete bridge at Central ave.; bond \$50,000	Board of Contract and Supply.
Indiana	Indianapolis	Aug. 6, 10 a.m.	Bldg. 7 culverts; repairing Cumberland gravel road	Carl Von Hake, Chm. Co. Comrs.
Oklahoma	Okemah	Aug. 8	Bldg. 25 steel and wooden bridges	E. Stine, City Clerk.
Ohio	Sandusky	Aug. 10, 10 a.m.	Bldg. hwy. bascule bridge and approaches; Huron village	John Deist, County Auditor.
Ohio	Cleveland	Aug. 10, 11 a.m.	Bldg. bridge work, Report 2679 at Gate Mills, Mayfield twp.	F. R. Lander, County Surveyor.
Indiana	Mishawaka	Aug. 11	Bldg. concrete beam bridge	Wm. Moore, City Engineer.
Pennsylvania	Lock Haven	Aug. 12, 1 p.m.	Bldg. steel span bridge, Kreodone, block floor and concrete sub-structure and floor over creek at Keating	Bd. Comrs. of Clinton County.
New York	Conklin	Aug. 12, 10 a.m.	Repair abuts. and pier of bridge over Susquehanna river	Frank Stanford, C. of Town Clerk.
Indiana	Anderson	Aug. 16	Bldg. 5 rein. concrete and steel bridges near city	A. Smith, County Engineer.
Iowa	Ft. Dodge	Aug. 22, 7:30 p.m.	Bldg. metal viaduct, 823 ft. long, sub. and super. complete; also remove old and erect new 330 ft. steel superstructure	S. J. Bennett, Mayor.
Montreal	Quebec	Sept. 1, noon	Bldg. Quebec bridge superstructure; \$500,000 check	L. K. Jones, Sec'y Dept. Rys. & Can.
South Carolina	Gaffney	Sept. 5	Rebldg. steel approaches on concrete base, repair bridge, etc.	E. Felix Lipscomb, County Superv.
LIGHTING AND POWER				
Minnesota	Minneapolis	July 29, 7:30 p.m.	Furn. electricity to operate 20,000,000-gal. cen. pump engine	H. N. Knott, City Clerk.
New York	Brooklyn	July 30	Condensers, piping, equip., etc., for power plant; cost, \$46,000	Commandant, Navy Yard.
Illinois	Chicago	July 30	Furn. and install. switchboard in new City Hall	B. J. Mullaney, Comr. Pub. Works.
Virginia	Lynchburg	Aug. 1, 10 a.m.	Bldg. complete heating system, boiler, power and lighting plant, etc., for State Epileptic Colony	Dr. A. S. Priddy, Exec. Of. Ep. Colony
Georgia	Sylvania	Aug. 1	Bldg. electric light plant	A. B. Lovett, Mayor.
North Carolina	Williamston	Aug. 1	Sale of franchise for lighting town by electricity	B. F. Godwin, Mayor.
Wisconsin	Browns town	Aug. 1, 1 p.m.	Installing electric lighting plant; 20 h.p. gaso. engine, belt-con. to 12.5 kw. generator, pole lines; total, \$2,800	C. E. Stewart, Wis. Bldg., Madison.
Ohio	Napoleon	Aug. 1	Changes and extensions to light plant	M. V. Meekinson, Sec'y Bd. Trus.
Kansas	Wilson	Aug. 2	Bldg. elec. light and water plant; G. P. Taylor, Engr.	N. Coover, City Clerk.
New Jersey	Newark	Aug. 5, 2:30 p.m.	Bldg. elec. light and power plant at County Court House	L. E. Voorhees, Bd. Freeholders.
Indiana	Brazil	Aug. 8	Electrical plant, heating, plumbing, County Infirmary	Board of County Commissioners.
Pennsylvania	New Cumberland	Aug. 8	Lighting city and Elkwood with arc lights	Borough Council.
California	Oakland	Aug. 10, 11 a.m.	Furn. elec. equipment for new fire alarm and police teleg. bldg.	W. B. Fawcett, Sec'y Bd. Pub. Wks.
MISCELLANEOUS				
Ohio	Sandusky	July 29	Alterations, etc., inc. elec. work and heating system at city market; cost, \$10,000	John Bing, Dir. Pub. Service.
Massachusetts	Boston	July 30	Enlarging County Court House	Jas. R. Dunbar, Chm. Co. Comrs.
Minnesota	Grove City	July 30	Bldg. \$25,000 Court House	E. H. Hoffman, Clk. Co. Superv.
Ohio	Cincinnati	Aug. 1, noon	Bldg. concrete and brick wall, Eden Park; conc. steps and walks at Inwood Park	M. C. Longenecker, Sec'y Pk. Bd.
New York	Corning	Aug. 1	Collection and disposal of garbage for 5 years	Dr. Frank S. Swain, Health Officer.
Florida	Live Oak	Aug. 1, 2 p.m.	Bldg. embankment; also 2 culverts, 3x20 ft.	A. M. Moseley, Chm. Co. Comrs.
Dist. of Col'bia	Washington	Aug. 2, 2 p.m.	Furn. 4-passenger touring car, gaso. tube, for Fire Department	C. H. Rudolph, Chm. Bd. Comrs.
Alabama	Florence	Aug. 2, noon	Bldg. 2-story brick and stone fireproof jail; Smith & Carter, Ar.	J. L. Hughton, Judge of Probate.
Mississippi	Natchez	Aug. 3	Sprinkling streets	W. G. Benbrook, Mayor.
Virginia	Alexandria	Aug. 4, noon	Bldg. steel cells and alterations at city jail	C. B. Marshall, Chm. Com. Pub. Prop.
Wisconsin	Racine	Aug. 6, 10 a.m.	Bldg. 200-ft. concrete pier, per lin. ft.; also concrete lake shore protection for 3 blocks, price per lin. ft. built	P. H. Connolly, Pres. Bd. Pub. Wks.
California	Oakland	Aug. 10, 11 a.m.	Bldg. concrete quay wall, between Myrtle and Clay streets	W. B. Fawcett, Sec'y Bd. Pub. Wks.
North Dakota	Rugby	Aug. 10	Bldg. Court House and jail; Breshner & Orth, Architects	Henry Albertson, County Auditor.
New York	Rochester	Aug. 13, noon	Furnishing 69,500 bulbs for Board Park Commissioners	M. O. Stone, Sec'y Park Board.
New Jersey	Westfield	Aug. 18	Erecting fire house; cost, \$20,000 complete; old bids too high	Town Council.

STREET IMPROVEMENTS

- Birmingham, Ala.**—City contemplates expenditure of \$750,000 for street improvements.—Maury Nicholson, City Engineer.
- Linden, Ala.**—Marengo County will vote in September on issue of \$200,000 of bonds for road improvements.
- Selma, Ala.**—Dallas County, W. S. Keller, Engineer, has completed surveys for road between Selma and Burnsville and will invite bids for construction.
- Forest City, Ark.**—City will not ask bids on five miles concrete sidewalks; work will be done by local contractors.—A. D. Boyle, Mayor.
- Little Rock, Ark.**—Pulaski and Lonoke Counties will construct 14-mile turnpike from Little Rock to point near Lonoke County line; estimated cost, \$100,000.
- Little Rock, Ark.**—City will pave portions of Main and 3d sts. with vit. brick, asphalt or cressed blocks.—Frederick Hotze, Commissioner of Improvement Dist.
- Texarkana, Ark.**—Pine st. will be paved, probably with asphalt.
- Martinez, Cal.**—Citizens will vote Aug. 2 on \$1,466,000 bonds for improving roads with asphalt block.—Wilbur La Roe, City Clerk.
- Oakland, Cal.**—County Supervisors are considering construction of boulevard from this city to Lumore.
- Sacramento, Cal.**—Plans and specifications for improvement of Twelfth st. road have been ordered by Board of Supervisors.
- Denver, Colo.**—Council has passed ordinance creating and establishing South Denver Improvement Dist. No. 7; cost about \$52,136.
- Fort Collins, Colo.**—County Commissioners have decided to advertise bids for new road from here to Estes park, through Missouri canyon.
- Pueblo, Col.**—Two mile road in Beulah section has been decided upon by County Commissioners.
- Hartford, Conn.**—Superintendent of Streets F. L. Ford has recommended macadamizing of number of streets.
- Washington, D. C.**—Maj. W. V. Judson, Engineer Commissioner, will recommend substitution of oil for water in sprinkling roads of District.
- Jacksonville, Fla.**—Bond election, \$100,000 for street improvement, carried.
- St. Augustine, Fla.**—Petitions have been received for paving two streets with brick or asphalt.
- White Springs, Fla.**—City contemplates vote on bond issue of about \$5,000 for street improvements.—G. S. Mobley, Mayor.
- Elberton, Ga.**—City is considering issue of \$25,000 bonds for macadamizing residence streets.
- Savannah, Ga.**—Chatham County will construct boulevard around Burnside Island, 19,337 ft. long, having right of way 60 ft. wide on highland and 200 ft. wide on causeway.
- Waycross, Ga.**—Ware County will vote Aug. 23 on \$150,000 road improvement bonds.
- Orofino, Ida.**—Citizens will vote July 30, on \$6,000 bonds to improve streets and fire department and erect city hall.
- Cilinton, Ill.**—City is considering six blocks of brick paving this summer.—L. W. Lemon, City Engineer.
- Decatur, Ill.**—Board of Local Improvements has decided to pave with brick on concrete base E. Leafland ave., Broadway and Warren st.; cost \$18,269.95; also N. College st., cost \$17,574; S. Franklin st. will also be paved and extended across the Illinois Central tracks.
- Decatur, Ill.**—County will soon let the contracts for building of several additional miles of turnpike.
- East St. Louis, Ill.**—Board of Local Improvements is considering improvement of Kansas ave., 11th to 13th st., cost \$8,100.35, and 19th st., Bond to Brady aves., \$9,200; contracts will probably be let early in September for improvement of State st., at cost of \$269,482.50.—W. J. Crocken, City Engineer.
- Evansville, Ind.**—Five-foot concrete sidewalks are to be built on Powell ave.—S. A. Bartholome, Clerk, Board of Public Works.
- Huntington, Ind.**—Estimates for paving Lincoln ave., prepared by City Engineer Wagner, follow: 1,126 ft. cement curb, 50 ft. marginal stone curb, 1,755 sq. yds. pavement, 2 catch basins and inlets, 2 manhole covers to reset, and 40 ft. of 10-in. sewer pipe. Cost estimate: Asphalt, \$4,251; poured macadam, \$3,123; bitumastic, \$4,251; wooden blocks, \$5,128.44; vit. brick, \$3,549.
- Indianapolis, Ind.**—A resolution has been passed for the permanent improvement of Washington boulevard.
- South Bend, Ind.**—Van Buren st. will be paved with tarvia macadam, and Howard ave. with Pioneer asphalt; Webster st. will also be paved from South st. to the G. I. & S. Railroad.
- Warsaw, Ind.**—Council has decided in favor of three miles of paving, half each of brick and asphalt.
- Fort Scott, Kan.**—Bids will soon be asked for paving 5th st.
- Lake Charles, La.**—Citizens have voted \$360,000 bonds for improvements, including street paving.
- New Iberia, La.**—The construction of the model road from the post office to the eastern boundary of the parish, a distance of 12 miles, is assured.
- New Orleans, La.**—Committee on Streets and Landings has reported favorably ordinance for paving with asphalt Robertson and Hennessy sts.
- Port Deposit, Md.**—State Roads Commission will construct macadamized road from Port Deposit to Battle Swamp, 3½ miles. John M. Tucker, Chairman, Union Trust Bldg., Baltimore, Md.
- Port Deposit, Md.**—Cecil County Commissioners have decided to reconstruct the Port Deposit-Carters Corner road, a distance of 4 miles.
- Boston, Mass.**—A loan of \$28,000 for the construction of Old Colony ave. has been authorized.
- Boston, Mass.**—Mayor Fitzgerald has asked Council for \$90,000 for widening Union Park st.
- Lowell, Mass.**—Petitions for paving Exeter st. with macadam and placing edge-stone on a number of streets have been received.
- Detroit, Mich.**—Council has directed Department of Public Works to advertise for proposals for paving Hamilton blvd. with cedar blocks, on concrete foundation, with Medina, Berea or other approved curbing; cost, \$8,112.—J. J. Haarer, Commissioner.
- Bemidji, Minn.**—No bids were received for \$12,000 paving bonds.
- Gilbert, Minn.**—Council will have Main st. graded and lay water mains.
- Grand Rapids, Minn.**—Town Board is to have the McKinney Lake addition to Grand Rapids replatted, and a boulevard built around the southeast side of the lake.
- Zumbrota, Minn.**—Village Council has ordered construction of sidewalks.
- Moss Point, Miss.**—Bids will be received Aug. 2 for \$15,000 street improvement bonds.—C. M. Fairley, City Clerk.
- Wiggins, Miss.**—City will vote Aug. 10 on \$5,000 bond issue for street improvements; city will need machinery for constructing streets.
- Springfield, Mo.**—Council has adopted resolutions providing for approximately 30,745 sq. yds. of asphaltic concrete pavement, and approximately 27,352 lin. ft. concrete curb and gutter combined; also approximately 5,690 sq. yds. brick paving with asphalt fill, and 3,148 lin. ft. concrete curb.
- Elizabeth, N. J.**—Council has passed ordinance for paving Charlton st. with brick and for issuance of \$30,000 street repair bonds.
- Irrvington, N. J.**—Ordinances for improving three streets have been passed.
- Perth Amboy, N. J.**—Council has ordered in Contra-Costa County.
- Trenton, N. J.**—Street Committee has concluded to have City Engineer Swan prepare estimate of cost of resurfacing North Broad st. with Filbertine.
- Woodbury, N. J.**—Engineer William C. Cattell has reported approval by State Commissioner of the specifications for new road between Auburn and Swedesboro.
- Hastings-Upon-Hudson, N. Y.**—Citizens have voted \$300,000 bonds for streets and sewers.
- Herkimer, N. Y.**—Citizens have voted \$12,000 to pave German st.
- Newburgh, N. Y.**—Improvement of Cochection turnpike with brick, at cost of \$128,000, is being considered.
- Syracuse, N. Y.**—Board of Contract and Supply will ask for new bids for paving Lincoln ave.—J. J. Halloran, Secretary.
- Southport, N. C.**—Town Creek Township will vote Aug. 16 on issue of \$15,000 bonds for road improvements.
- Ashtabula, O.**—Council has directed Director of Public Service to advertise for bids for paving N. Main, Kinsman and Lake sts. with vitrified brick, on concrete foundations.—L. A. Amsden, City Engineer.
- Quinton, O.**—South 3d st. will be improved.
- Muskogee, Okla.**—Council has decided to grade, pave, macadamize, gutter, curb and drain S. Cherokee and five other sts.—Chas. Wheeler, Jr., City Clerk.
- Oklahoma City, Okla.**—Council has rejected bids for \$35,000 worth of grading work in Capitol Hill; also \$10,000 worth in Great Heights; bids will be readvertised.—City Engineer Burk.
- Pawhuska, Okla.**—City will pave 15 blocks with asphalt.
- Eugene, Ore.**—Ordinances have been passed for graveling a number of streets.
- Portland, Ore.**—Mission st. will be old Exposition Building.
- Bellevue, Pa.**—Citizens have voted \$25,000 bonds for street work.
- Erie, Pa.**—Election to vote on \$75,000 street improvement bonds will be held Aug. 2.
- North York, Pa.**—Borough will continue macadamizing of 5th ave. from Duke to beyond Queen st., and W. 6th ave., from Sebley alley to George st. Address President Herman or Councilman E. M. Bare.
- Phoenixville, Pa.**—Council has decided to issue \$12,500 bonds to pave East Bridge st.
- Pittsburg, Pa.**—Property owners have asked to have the grade and location of Webster ave. changed; probable cost, \$70,000.
- Wilkes-Barre, Pa.**—Council has authorized paving of Stanton and Empire sts. with vitrified brick on concrete base, and curbing both sides.—Fred H. Gates, City Clerk.
- York, Pa.**—McKensize st. is to be opened from College place to Springettsburg ave., and \$4,700 has been appropriated for paving short intersections and in front of non-assessable property.
- Providence, R. I.**—Board of Aldermen has opened, necessitating tearing down of the decided to curb four avenues.—Wm. E. Clarke, City Clerk.
- Dallas, Tex.**—There is a great demand for the laying of oil macadam paving, nine streets having petitioned for it at one meeting; bids have been ordered for construction of curb and gutters on both sides of Rawlins st. Address Commissioner Doran.
- Denison, Tex.**—Commissioner's Court has sold \$250,000 Grayson County road improvement bonds to the State National Bank, Denison; bonds, which bear 4½ per cent interest and run 40 years, were sold at par and accrued interest; contracts will shortly be let for construction of 65 miles of macadam road in the district and work will be commenced as soon as the preliminaries can be arranged.
- Galveston, Tex.**—But one bid was submitted for repairing brick pavement on Market st. from Kelso & Vautrin and was rejected; authority was granted to re-advertise.
- Paris, Tex.**—Portion of N. Main st. and four sides of Public Square are to be paved; contract let for two streets with oil asphalt at \$1.83 per sq. yd.
- Ogden, Utah.**—Paving of 28th st. has been recommended.
- Clifton Forge, Va.**—Council is considering issuance of \$65,000 of bonds for paving streets and sidewalks, etc.
- East Radford, Va.**—Bids will be received July 28 for \$93,000 bonds, a portion to be used for streets and schools.—L. D. Byrd, Clerk Council.
- Emporia, Va.**—Town Council has appropriated \$5,000 for street improvements.
- Lynchburg, Va.**—Board of Aldermen has appropriated \$15,000 for improvement of Taylor, Wise and 14th sts.
- North Emporia, Va.**—Town Council has appropriated \$5,000 for street and sidewalk improvements.
- Richmond, Va.**—Council has appropriated \$15,000 for improvement of streets in Washington ward.—Charles E. Bolling, City Engineer.
- Wise, Va.**—Wise County will vote November 22 on issue of \$700,000 bonds for road construction.
- Harrington, Wash.**—City will macadamize three blocks on 3d ave.
- Spokane, Wash.**—Council has passed ordinance for parking, grading and sidewalking large number of streets; bids will be asked at once.
- Spokane, Wash.**—Council has rejected as too high all bids received for paving four streets; estimates and lowest bids by R. S. Blome & Co. were as follows: Eighth ave., estimate \$17,500, bid \$22,300; Fourth ave., \$40,000, \$51,800; McClellan and Ninth aves., \$12,200, \$15,600; Eighth ave., Hilliard to the bridge between Division and Browne sts., \$6,100, \$7,800.
- Morgantown, W. Va.**—County Engineer R. D. Hennen has been authorized to make surveys on Holland ave. preparatory to paving.
- Morgantown, W. Va.**—County Road Commissioners will let contract in about 30 days for construction of 3,000 lin. ft. of brick pavement, 26 ft. wide, with sewers, concrete curb and sidewalks.—Robert D. Hennen, Road Engineer.
- Webster Springs, W. Va.**—Town will expend \$10,000 for paving streets with concrete.

CONTRACTS AWARDED

- Bessemer, Ala.**—Henry Wallenkamp, city, for putting in 2,000 ft. cement sidewalks, as follows: Cement walks, 9½c. per sq. ft.; curbing and gutters combined, 35c.; straight curbing, 18c.; crossings, 18c.; for filling, 50c. per cu. yd.; excavating, 2c. per sq. yd.
- Dothan, Ala.**—To Wilford & Whitaker, at \$1,000 per mile, 13 miles of road from Dothan to Cottonwood and from Gordon to Ashford, distance 9 miles.
- Little Rock, Ark.**—Memphis, Tenn., Asphalt Paving Co., at \$3,500, for resurfacing street intersections on Center st. from 12th to 18th sts.

Benicia, Cal.—Piedmont Construction Co., oiled macadam, \$96,698.

Sacramento, Cal.—Paving G st., contract abandoned by Jas. Touhel, to Jas. Lawrence.

New Britain, Conn.—Indian Refining Co. for heavy oil; also for tank of dustoline.

Fort Barrancas, Fla.—Henry Monk, Pensacola, Fla., macadamize National Cemetery road, from Fort Barrancas to Big Bayou, \$15,000.

Augusta, Ga.—Two gasoline rollers and one grading machine to Austin-Western Road Machinery Co., about \$5,000.

Bloomington, Ind.—C. M. Kirkpatrick, brick paving, \$32,984, and G. T. Miller, brick paving, \$29,210.

Evansville, Ind.—Western Construction Co., repairing streets about court-house for \$1.84 per foot; Elchel Company bid \$1.80, without binder.

Evansville, Ind.—Paving with brick portions of Main st. and Broadway, to W. Ewing Shields, Seymour, \$41,860.

La Porte, Ind.—W. B. Hutchinson, Cathedral macadam road, 7 miles long, \$36,350; four other bidders.

Des Moines, Ia.—Paving with brick, 3d and Market sts., to O. P. Herrick, \$2 and \$2.04 per sq. yd.; to Christie Constr. Co., curbing 35th st., 37c. per lin. ft.; to Bryant-Ford-McLaughlin Co., portion of 35th st. with asphalt, \$2 per sq. yd.

Ft. Dodge, Ia.—Constructing 29,500 sq. yd. concrete pavement on 5-in. foundation, to the St. James Tile & Mfg. Co., St. James, Minn., \$1.62 per sq. yd.

Osceola, Ia.—Paving, 13,000 sq. yds., brick, to Wm. Horrabin, Iowa City, \$2,105; setting 8,000 ft. new curb, 52c. per ft.—Wm. Temple, City Clerk.

Shawnee, Ia.—Metropolitan Engineering & Construction Co., city, 52,000 sq. yds. asphalt paving, at \$1.99.

Vinton, Ia.—Paving entire business district, to Mike Ford, Cedar Rapids, \$1.74½ per sq. yd. for brick paving; curbing, to Haskell & Hawn, Cedar Rapids.

Vinton, Ia.—Paving from plans of Somal. N. Parsons, Marion, as follows: To M. Ford, Cedar Rapids, 32,575 sq. yds. brick paving on 4-in. concrete and 2-in. sand base, \$1.74½; 8,930 cu. yds. excav., 48c.; extra concrete per cu. yd., \$5.75, and drain tile per lin. ft., 6c., and to the Concrete Constr. Co., Cedar Rapids, for 9,944 lin. ft. concrete curb, 6 x 24 in., 36c.; extra concrete per cu. yd., \$8; reset old curb, per lin. ft., 25c., and drain tile, per lin. ft., 10c.

Waterloo, Ia.—Construction sidewalks on 5th st. bridge, to M. J. Rieff, \$1,065.55; manholes, 90c. each, and 12,303 sq. ft. walk, \$1,045.75; total, \$1,065.55; other bids were: Mr. Tippey, \$1,119.37; W. H. Shirey, \$1,230.30; Mr. Lackington, \$1,599.39.

Leavenworth, Kan.—Paving Marshall st. from 5th ave. to W. 7th st., to O. C. Chapin, \$-.43 per sq. yd.

Topeka, Kan.—Sidewalk construction for new fiscal year, to C. B. Ramsey, 8½c. per sq. ft. for brick walks and 10 2-10c. per sq. ft. for cement walks.—W. S. Fulton, City Engineer.

New Orleans, La.—Standard Paving & Construction Co., city, \$20,248.60, subsurface drains, etc., in connection with paving of Plum st. and \$25,646.40, subsurface drains, etc., Burdette st.; Barber Asphalt Paving Co., Philadelphia, Pa., \$12,995, repaving Burdette st. with asphalt; \$12,781.90, subsurface drains, and \$13,680.90, paving Bienville st.; \$36,227 for paving with asphalt, and \$34,036.50 for subsurface drains in Alexander st.; Southern Bitulithic Co., Nashville, Tenn., \$9,528, for paving Plum st.

Saginaw, Mich.—Sidewalks: W. N. Sager, first six wards, also 13, 14, 15 and 16; Joseph La Londe secured second six wards, also tied with W. Odell for Wards 17, 18, 19 and 20.

Eupora, Miss.—Oxford Concrete Co. and Frank F. Conover, Grenada, for 5,000 cu. yds. grading, 3,000 sq. ft. crossings, 100,000 sq. ft. sidewalks and 250 culverts, \$10,000.

Grenada, Miss.—Frank F. Conover, city, concrete curb and gutter, sidewalks and crossings.

Anaconda, Mont.—Hammill & Colman, for cement walks and curbing.

Newark, N. J.—Grading, paving with bituminous telford pavement, etc., Pleasant Valley ave., about 4 miles, to Monroe Paving Co., 509 Betz Bldg., Philadelphia, Pa., \$34,700.

Paterson, N. J.—Paving Park ave., from Straight st. to E. 3d st., about 27,080 sq. yds., with American wood block, to Empire City Contracting Co., World Bldg., New York, N. Y.; approximate cost, about \$79,000; pave River st., about 6,250 sq. yds. of asphalt, to Geo. MacDonald, 146 Broadway, New York, N. Y., about \$16,051.

Roselle, N. J.—Laying 1,900 ft. of walk on 2d ave., to A. L. Clark Stone Co., 69c. per lin. ft.

Trenton, N. J.—Bushkill Quarry & Construction Co., stone road from the Glen Gardner Railroad Station to tuberculosis institution, at \$11,923.32; this concern bid

\$12,698.16 for an oil macadam road; other bidders were: T. J. McGovern, Trenton, \$15,867 for stone road and \$17,000 for macadam; Irving Demarest, Flemington, \$13,071.50 for stone and \$14,832.80 for macadam; Grove & Honby, Somerville, \$17,333 for stone and \$18,741.80 for oil and macadam.—Robert A. Meeker, State Road Supervisor.

Buffalo, N. Y.—Repairing all asphalt streets for year to Barber Asphalt Paving Co., 880 Ellicott sq.

Buffalo, N. Y.—Concrete sidewalks to Robert Selbert, 7½c. sq. ft.

Hoosick Falls, N. Y.—Laying 68,200 sq. ft. concrete sidewalks, 5,600 sq. ft. concrete driveways, 4,660 lin. ft. concrete curb and gutter, and 7,500 sq. ft. flag relaid; also about 90 sq. yds. vitrified brick pavement, and 2,700 sq. yds. bitumen macadam, to Kingston Constr. Co., Hudson Falls, \$13,381.

Lockport, N. Y.—John Quinn, cement sidewalk on Van Buren st., \$947.

Oswego, N. Y.—S. C. Smith & Son, Waverly, 4-ft. concrete work and for building steps to receiving vault in cemetery.

Syracuse, N. Y.—Grading Reed ave., to Ernest Wood, \$3,449.60.

Cincinnati, O.—Rebuilding 25 miles of road, Kenton County, to Hanna Construction Co., \$200 per mile.

Beaver, Pa.—Paving Sharon ave., to R. D. Hunter & Co., grading 48c., curb set 50c., paving per sq. yd. 97c.

York, Pa.—Laying of about 3,000 ft. of gutters and curbing on Penn Park, to F. Lehman & Co.

York, Pa.—Bitulithic paving, Manchester st., to Standard Bitulithic Co., \$2.22 per sq. yd.; the Filbert Co. bid \$1.78 for asphalt and \$2.15 for brick, and the Barber Co. \$1.72 for asphalt; asphalt paving, Cherry alley, to Barber Asphalt Co., \$1.71; the Filbert Co. bid \$1.78.

Memphis, Tenn.—Turnpike Board, J. F. Williams, Chairman, for about 30 miles of road in Shelby County: W. F. McCalla, Stewartville pike, 2 mi., and Brunswick pike to State rd., 3 mi.; O. R. Branch, Millington and Sloanville, 2 mi.; W. H. Williams, Kerrville and Rosemark, 1 mi.; J. G. Galloway, Coleman ave., 2 mi.; C. G. Gowan, Avenue and Bartlett, ½ mi.; Baxter & Farley, extension of old State rd., 4 mi., and Collierville and Fisherville, 3 mi.; McVey & Scruggs, Germantown and Cordova, 4 mi.; C. E. Prescott, Capleville and Tiptop, 3 mi.; Ethelyn, Kirkland, Gaither, Neffler and Humberlives, total of ¾ mi.; Lower horn Lake rd., 1 mi.; bids ranged from \$800 to \$1,000 per mile.

Nashville, Tenn.—Foy-Proctor Co., city, for curbing and sidewalk paving, \$10,000.

Trenton, Tenn.—To Novaculite Graveling & Paving Co., Tamms, Ill., gravel about 5 mi. of street, and to Ira Fitzgerald, Trenton, for grading.

Abilene, Tex.—R. H. Locke, Abilene, cement walks around three ward buildings and high school; also cement floor in basement of high school; 12,000 sq. ft. walks; 5,300 ft. flooring; cost over \$3,000.

Dallas, Tex.—Municipal Paving Co., city, \$12,862.50, for resurfacing streets around court-house.—J. M. Preston, City Engineer.

El Paso, Tex.—Paving N. Campbell st. to Petrolithic Co.

Galveston, Tex.—J. F. Magee, Texarkana, Tex., at \$5,792, sidewalk and curbing from Avenue B to Avenue H; 4,000 sq. yds. sidewalk, 2,200 lin. ft. concrete curbing, and 2,350 lin. ft. concrete retaining curb.—John M. Murch, County Auditor.

Longview, Tex.—Texas Grading Co., 114 Travis st., Houston, at \$60,000, for brick and macadam pavements on various streets.

Mt. Pleasant, Utah.—Wheelwright Construction Co., 23 blocks cement sidewalks, \$8,016; other bidders: Gilkerson & Long, Salt Lake, \$10,719.09; A. C. Nielsen, Jr., Ephraim, \$10,679.92; Carlson Bros., Mantli, \$10,467.25; McKay & Reed, Salt Lake, \$10,515.83; Child, Fakler & Child, Ogden, \$10,329.56.

Ogden, Utah.—O'Neill Construction Co., sidewalks, \$6,424.

Chehalis, Wash.—Street paving, to the Warren Construction Co. Portland, \$91,100; bitulithic is to be used with 6-in. concrete base.

Hoquiam, Wash.—Road work in Chehalis County, to W. G. Hyatt, approach to Satsop bridge, about \$4,000; to Snyder & Cooper, building London rd., \$10,140, and Wishkah rd., \$19,000.

Seattle, Wash.—S. Norwich, paving James st., \$72,961.55; John G. Pierce, paving alley, \$1,957.50; W. H. Smith, concrete walks, \$6,581.30; Andrew Peterson & Co., grading, \$3,816.90.

Seattle, Wash.—Queen City Bridge Works, constructing storage bin at municipal asphalt plant, \$1,080.

Spokane, Wash.—Paving Mission ave. to Barber Asphalt Co., \$84,500, maintenance \$2,410; other bidders: Western Asphalt Paving Co., bid \$83,000, maintenance, \$3,500; Independent Asphalt Co., \$84,307, \$3,214; estimate \$95,000.

Clarksburg, W. Va.—Concrete Construc-

tion Co., Suite 508, Union Trust Bldg., Parkersburg, W. Va., at \$40,000, for paving and curbing on 6 streets; contracts for material had been let.

Green Bay, Wis.—Paving Monroe ave and other streets with asphalt, curbing, gutter, etc., to J. F. Hill, Chicago, Ill.

Waukesha, Wis.—Street paving to Advance Construction Co., 31,129 sq. yds. tar macadam, 77c.; excavation 15,452 cu. yds., 30c.; other bidders: Two Miracle Con. Corp., Minneapolis, Minn., \$55,238.17; Marquette Const. Co., Chicago, Ill., \$52,095.50; G. H. Stanchfield, Fond du Lac, Wis., \$54,217.09; A. J. Hewitt, Milwaukee, Wis., \$53,305.64; Fred Hildebrand, Milwaukee, Wis., \$53,616.31; curbing to same firm, 21,435 ft., 5075c.—Margaret Butler, City Clerk.

Lindsay, Ont., Can.—Paving William st., Asphalt Block Pavement Co., Windsor, \$2.40 per yd.

BIDS RECEIVED

Denver, Col.—Alley paving: District 23, (a) Heckert & Mueller, \$12,965.70; (b) National Construction Co., \$13,072. District 24, (a) \$16,994.95; (b) \$17,178.

South Portland, Me.—Building trunk line, State highway, from South Portland end of Vaughans bridge to Cashes Corner, Angelo Lorelo, \$5,650; R. D. Shannahan, \$5,797; John Gulliver, \$4,449; Forgiore & Romano, \$5,622.—Paul D. Sargent, Commissioner of State Highways.

Brooklyn, N. Y.—Regulating and paving with granite on sand or cinder foundation, Flatbush ave., about 9,460 sq. yds. (a) price per sq. yd., (b) totals: Henry P. George (a) \$2.50, (b) \$23,650; R. L. Russell (a) \$2.65, (b) \$25,069; Norton & Gorman Construction Co. (a) \$2.49, (b) \$23,555; M. F. Hickey (a) \$2.95, (b) \$27,907; W. J. Ford (a) \$2.87, (b) \$27,150; Newman & Carey Co. (a) \$2.68½, (b) \$25,400.10; Louis Lilley (a) \$2.58, (b) \$24,407; Frank J. Gallagher (a) \$2.69, (b) \$25,447; Reasner Construction Co. (a) \$2.62, (b) \$24,785.

Niagara Falls, N. Y.—Paving Buffalo ave.: Warren Bros. Co., Boston, Mass., \$72,142, for bitulithic, and Read Coddington Engineering Co., city, \$62,056 on Hassam cement concrete, \$72,923 on asphalt block, \$81,937 on granite block, and \$68,456 for metropolitan block.

Watervliet, N. Y.—Paving Broadway, Michael W. Nolan, city, \$3.19 per sq. yd.; Hassam Paving Co., Worcester, Mass., \$3.15; John H. Gleason, Troy, \$3.25; curbing per lin. ft., Nolan 89c., Hassam \$1, Gleason 90c.; catch basins, Nolan \$60 each, Hassam \$50, Gleason \$50.

Dayton, O.—Macadamizing one mile of Cincinnati pike, Frank Tejan, \$11,580; Gebhart & Kline, \$11,582.

Norwalk, O.—Paving Monroe, Case, Whittlesley Milan and Townsend sts., as follows: Monroe st. and Case ave., George B. Herring & Son, Mansfield, \$9,619; the Buckeye Engineering Co., Norwalk, \$10,094; W. S. Pace, Cleveland, \$9,795; Joseph L. Smith, Lorain, \$10,720; James Quinn, \$12,316. Whittlesley ave., George B. Herring & Son, \$4,138; the Buckeye Engineering Co., \$4,518; W. S. Pace, \$4,450; Joseph L. Smith, \$4,460; James Quinn, \$5,401. Milan st., George B. Herring & Son, \$5,410; Buckeye Engineering Co., \$4,710; W. S. Pace, \$4,552; Joseph L. Smith, \$4,694; James Quinn, \$5,465. Townsend ave., Buckeye Engineering Co., \$2,881.

Youngstown, O.—Grading Pyatt st., William Haynie, \$1,545; James McCarron, \$3,060; S. H. DeGrodt, \$3,100; G. J. Miller, \$3,290; M. P. Connelly, \$3,380; William Hynes, \$4,320.

Portland, Ore.—Paving, East 60th st. district with bitulithic pavement, Pacific Bridge Co., \$116,533; Warren Construction Co., \$114,597; 10th st. district, asphalt paving, Oregon Independent Paving Co., \$98,383; Barber Asphalt Paving Co., \$89,833; latter company on y bidder for paving East 51st st., \$15,352; Oregon Hassam Paving Co., \$40,664 for paving Kerby st.; East 10th and East 9th sts., \$29,007; concrete paving over the 1st st. district in South Portland, Archie Mason, \$1.40 per sq. yd.; total \$31,481; Russell st., with stone blocks, National Construction Co., lowest bidder, \$13,590; Warren Construction Co. submitted proposals for paving East 27th st. district, \$70,014, and 13th st. from Jefferson to Hall, \$21,053.

Chester, Pa.—Grading and paving Dupont st., to Barber Asphalt Co., sheet asphaltum; bidders were John Hanna & Sons, vit. shale brick, Grafton, \$2.16 per sq. yd.; Mack block, \$2.20 per sq. yd.; furnishing and setting 20-in. granite crossing stones, 70c. per lin. ft.; setting curb, 65c. per lin. ft.; resetting curb, 12c. per lin. ft.; reset crossing stones, 12c. per lin. ft.; Barber Asphalt Co., paving with sheet asphalt, no guarantee or five year guarantee, \$2.08 per sq. yd.; repaving roadway torn up under supervision of the city, \$2.50 per sq. yd.; furnishing and setting 20-in. granite curb, 80c. per lin. ft.; furnishing and setting crossing stones, 75c. per lin. ft.; resetting curb, 18c. per lin. ft.

Ogden, Utah.—Plans for \$40,000 sewer system in North Ogden have been rejected by Sewer Committee.

Clifton Forge, Va.—Council is considering issue of \$65,000 bonds for construction of sewers, paving streets and sidewalks, building bridges, erecting jail, etc.

Norfolk, Va.—Finance Committee of Council has approved appropriations for drainage system; \$13,752 for Cumberland st. drain; \$2,340 for Channel st.; \$4,860 for drain between Redgate and Webster aves.

Richmond, Va.—Committee on Streets has recommended the construction of a sewer on Broad st.; cost about \$16,000.

Evansville, Wis.—Citizens have voted to install complete sewerage system and disposal plant.

CONTRACTS AWARDED

Texarkana, Ark.—Work in Sewer Dist. No. 8, near County ave., to Ockander Bros for about \$2,300.

Des Moines, Ia.—Constructing 3,965 lin. ft. clay pipe sewers: To Cook Const. Co., 22d and 23d st., \$1.84 per lin. ft.; to T. J. Casselberry, for sewer on E. 12th st., \$2.

Leon, Ia.—Constructing 2 miles of 6 to 12-in. pipe sewer and disposal plant to O'Farrell Contr. Co., Dubuque, \$10,995.—Chas. P. Chase, Clinton, Engineer.

Louisville, Ky.—Constructing Section B, Oak st. sewer, Helm & Henderson, Cleveland, O., lowest bidders, as follows: 923 lin. ft. earth excavation, 54-in. concrete sewer, cut 9 to 22 ft., \$9.80; 626 lin. ft. earth excavation, 27-in. pipe and concrete, cut 8 to 17 ft., \$8.95; 1,000 lin. ft. earth excavation, 45-in. concrete, 8.5 to 25 ft., \$9.25; 25 lin. ft. earth excavation, brick sewers, \$3; 680 cu. yds. concrete masonry, "A," \$13.15; 90 cu. yds. concrete masonry, "B," \$11; 8 cu. yds. concrete masonry, "A," in junction chambers, \$30; 10 cu. yds. excavation, below masonry, \$2; 10 cu. yds. gravel refill, \$2; vit. pipe, \$1.506; 633 lin. ft. pipe laying, 60c.; 2,000 lin. ft. 6-in. underdrain, 30c.; cleaning up, lump sum, \$100; total, \$36,771. Totals of other bids, Guild & Co., Chattanooga, Tenn., \$37,589; American Engineering and Construction Co., Chicago, Ill., \$38,816; Henry Bickel Co., Louisville, \$39,120; Jos. Perry & Sons, Pittsburg, Pa., \$39,689; L. W. Hancock Co., Louisville, \$39,872.

Attleboro, Mass.—Trunk line of sewers from filter fields to Tiffany st. and continuance of trunk line from Tiffany to Thatcher st., to Bruno & Pettitti, Boston, \$58,686 and \$38,198.

Munising, Mich.—Sewers, to Thos. E. Wooley, La Crosse, Wis., at the following bid: 2,125 ft. 8-in. pipe sewer, 69c.; 3,578 ft. 20-in., \$1.23; 716 ft. 22-in., \$1.65; 415 ft. 24-in., \$2.05; 552 ft. 3 x 3 ft. concrete sewer, \$4.40; 1,433 ft. 2 ft. 6 in. x 3 ft., \$4.20; 2 bulkheads, each, \$100; 19 manholes, each, \$38; 19 catch basins, each, \$30, etc.; total cost, \$18,265; Totals of other bids: Fraser & Danforth, Rochester, Minn., \$20,577; Chris Johnson, Oshkosh, Wis., \$21,404; Chris. Nebel & Johnson, Gladstone, Mich., \$31,782; and H. O. Shafer, Green Bay, Wis., \$19,440.

Duluth, Minn.—Sanitary sewers in 7th alley, to George R. King and Hugh Stale.

St. Louis, Mo.—Bambrick Bros., Construction Co., 5229 St. Louis ave., to construct South Harlem joint district sewer; Southern Construction Co., Mermoid and "T" Bldg., first section of River des Peres foul-water sewer.

Missoula, Mont.—Sewer system, to the James Kennedy Construction Co., Salt Lake, \$198,645.45; R. M. Bardsen Co., Butte, lowest bidder, about \$141,000.

Haddon Heights, N. J.—Building sewer system and disposal plant, to B. F. Sweeten & Sons, \$53,000.

Jersey City, N. J.—Sewer in Cliff st., to Michael J. Curley.

Fulton, N. Y.—Construction of laters to west side sewer system, to Swift & Hookway, \$16,353.65.

Asheville, N. C.—M. H. Kelly, city, for sewer and water construction, \$12,000.

Murphy, N. C.—M. H. Kelly, Asheville, sewer and water contract, at \$12,000.

Cincinnati, O.—Sewering Earnshaw ave., to Thos. Maloney, \$3,555.25.

Ogden, Utah.—McKay & Read, sewer in Dist. No. 108, \$8,900.

Seattle, Wash.—Constructing Lake Washington Dist. of north trunk sewer, to C. J. Erickson, city, at the following bid: concrete sewer: Fixed estimate, \$15,000; 710 lin. ft. 114-in., \$36; 2,760 lin. ft. 90-in., \$25; 1,040 lin. ft. 72-in., \$22; 66-in., \$21; 6,000 lin. ft. 60-in., \$20; 4,480 lin. ft. 54-in., \$19; 7,270 lin. ft. 48-in., \$18. Brick sewer: 1,360 lin. ft. 32 x 48-in., \$16; 22,670 lin. ft. 24 x 36-in., \$14; 1,410 lin. ft. 36-in., \$15; 280 lin. ft. 30-in., \$13. Pipe sewer: 460 lin. ft. 24-in., \$6; 2,240 lin. ft. 21-in., \$5; 960 lin. ft. 18-in., \$4; 70 lin. ft. 15-in., \$2.50; 1,230 lin. ft. 12-in., \$2; 430 lin. ft. 10-in., \$1.50; 800 lin. ft. 8-in., \$1.25; 123 manholes, each, \$75; 1,430 lin. ft. manholes, extra depth, \$5; 1 siphon, \$25,000; 1 sand catcher, Montlake blvd., \$3,000; 1 sand catcher, Newport ave., \$1,000; 1 stormwater overflow, \$4,000;

1 junction chamber, Montlake blvd., \$1,500; 1 junction chamber, E. Lynn st., \$1,000; Washington Park viaduct, lump sum, \$15,000; 60 piles, each \$8; 70 cu. yds. foundation, concrete, \$9; canal crossing, Plan "A," lump sum, \$2,000; canal crossing, Plan "B," lump sum, \$2,000; 54 ft. 15-in. culvert, \$1; 650 ft. 6-in. side connections, \$1; 500 cu. yds. extra concrete, 1:8, \$9; 10,000 lbs. extra steel, 6c.; total, \$709,939; totals of other bids: F. McLellan, Burke Bldg., city, \$779,677; Grant Smith & Co., 2d ave. and Ball st., city, \$816,335.

Watertown, Wis.—William Shiebal, constructing 1,519 ft. 5-in. sewer holes, 1 manhole, 3 flush tanks, \$1,191.97; other bid, Otto Biefeld, \$1,268.92.

BIDS RECEIVED

Pella, Ia.—Construction of sewers from plans of the Iowa Eng. Co., Clinton. (a) city sewer, (b) outlet sewer: Cook Const. Co., Des Moines, (a) \$27,568, (b) \$11,432; O'Farrell Contr. Co., Dubuque, (a) \$19,329, (b) \$9,530; J. W. Turner Improv. Co., Des Moines, (a) \$18,906, (b) \$9,104; W. D. Yeager Co., Cedar Rapids, (a) \$18,619, (b) \$7,951; Independent Const. Co., Davenport, (a) \$18,197, (b) \$9,365; Katz-Craig Const. Co., Omaha, Neb., (a) \$18,142, (b) \$9,018; H. J. Cathroe, Omaha, Neb., (a) \$16,968, (b) \$11,633.

Millburn, N. J.—Sewers, Pasquale Mauriello, Orange, lowest bidder, 9,300 ft., \$7,121.50.

New York, N. Y.—Sewers in East 174th st., between Boston road and West Farms road, etc., and in Drainage st., P. F. Brennan, 624 Madison ave., \$19,216 and \$43,132, respectively; Briges & McLaughlin, \$21,983 and \$51,407; Aenita Construction Co., \$19,304; Delbalso Construction Co., \$22,634; Stanton Construction Co., \$19,191 and \$50,986; Thos. Mancini, 4034 Lawrence pl., Williamsburg, \$18,417; Voorhees Sullivan Co., \$20,772; F. M. Palidino, \$21,567 and \$49,556; Julius Dragonetto, \$20,018; Joseph Burns, \$20,956 and \$55,234.

Youngstown, O.—Edgewood st. sewer and paving, A. O'Haro, \$1,130; P. J. Faragher, \$1,216.50; M. J. Connelly, \$1,313.40; G. J. Miller, \$1,317.50; James McCarron, \$1,433.50; William Hynes, \$1,676.80; Watt st. sewer, Wm. Hynes, \$1,424.95; P. J. Grady, \$1,465.90; Pat Grady, \$1,478.60; P. Diorio, \$1,481.30; G. J. Miller, \$1,508.95; A. O'Haro, \$1,622.90; Jas. McCarron, \$1,756.90.

Norristown, Pa.—Constructing sewage disposal plant, Pitt Const. Co., Pittsburg, lowest bidder, \$39,728.—Albright & Mebus, Philadelphia, Engineers.

WATER SUPPLY

Alexander City, Ala.—City has postponed date of election to Aug. 17 on \$2,500 bonds for extending water works system.

Opelika, Ala.—City has voted \$85,000 bonds for construction of water works and electric light plant.

Alameda, Cal.—City Engineer I. N. Chapman has indorsed the Bay Cities Water Co.'s proposition to supply the city with water.

Sacramento, Cal.—New pump for water works, cost \$100,000, is absolutely necessary if bond issue for clear water does not carry next month.

Boulder, Colo.—Plans are being prepared by Council for improvement and extension of water works; cost about \$500,000.

Clifton, Colo.—Construction of water works is being considered.

East Hartford, Conn.—The Fire Commissioners will lay a main to Hillstown.

White Springs, Fla.—City voted negatively on \$20,000 bond issue for water works and sewerage; contemplates holding another election later to vote on \$45,000 bond issue for water works, sewerage, lighting plant and street improvement.—G. S. Mobley, Mayor.

Dalton, Ga.—H. S. Jaudon Engineering Co., Savannah, Ga., has completed plans and specifications for water works and electric light plants; water works system will include 4,500,000 gals. daily; equipment will include steam pump and electric pump for lifting water from Mill Creek, on which pumping station, filter tanks, etc., will be located, into settling basin; two steam and one electric pumps will pump water, after it has been filtered, into reinforced-concrete reservoir on top of Mt. Rachel; reservoir capacity, 750,000 gals.; filter tank at present plant will be used and another of reinforced concrete will be built; 122-in. water main will lead from reservoir on Mt. Rachel, which will join Hamilton st. main at Waugh st.; another main will be laid on street parallel with Hamilton st., and two mains will be joined at intervals; electric light plant will be installed in same building with water works plant; electrical equipment will include compound-condensing engines direct connected to generators; capacity, 500 hp.

Meigs, Ga.—City will vote \$20,000 bonds for water works.

Rockmart, Ga.—City will vote Aug. 10 on \$25,000 bonds for construction of water works; I. F. Mundy, Mayor.

Centrallia, Ill.—The Water Supply Co. has purchased 35 acres of land for a site for a reservoir.

Springfield, Ill.—Water Works Committee has adopted resolution to hire expert to determine improvements needed to water works.

Indianapolis, Ind.—Indianapolis Water Co. is considering construction of dam at Broad Ripple.—F. C. Jordan, Secretary, 113 Monument place.

Mishawaka, Ind.—Water mains will be laid on W. Lawrence st.

Normal City, Ind.—Construction of municipal water works is under consideration.

Fort Dodge, Ia.—Another city well will be installed. Address Mayor Bennett.

Sioux City, Ia.—Bids will soon be received for building suction main extension from water works pumping plant. Bids to be received on both concrete and brick; cost \$2,000.—K. C. Gaynor, City Engineer.

Altoona, Kan.—Citizens have voted to issue bonds for water works.

Leitchfield, Ky.—Oelze Bros., Owensboro, will construct water works.—W. W. Mauzey, City Clerk.

New Orleans, La.—Sewerage and Water Board has adopted resolution requesting Board of Liquidation to advertise for sale of \$7,000,000 improvement bonds about September 15.

Cumberland, Md.—Council has appropriated \$5,000 for engineer's service, examinations and plans for gravity water supply from Evitts Creek, with Bottle Run as an adjunct; legislature authorized \$500,000 bond issue to be approved by voters.

Elkton, Md.—City defeated \$75,000 bond issue for constructing water, light and sewer systems.

Hancock, Md.—City will award contracts for construction of water works in sections; bids lately received for plant as whole exceeded \$30,000 bond issue; system will include 300,000-gal. concrete reservoir, pumping station, filtration plant, 2 miles water pipe and sewer; plans by Penniman & Fairley, 411 Marine Bank Bldg., Baltimore.—R. J. McCandlish, Clerk.

Williamsport, Md.—Edward M. Byron, M. Emmett Gullen, Wm. G. Byron, and others, have organized company and will petition city for franchise to establish water works system; system will include reservoir, filtration plant, etc.; estimated amount to be expended, \$40,000.

Austin, Minn.—Council is considering issuance of \$30,000 bonds for bringing water of Sargents Springs into the city for an enlarged supply.

Granite Falls, Minn.—Citizens voted July 15 on \$40,000 bonds for improving water works and electric light plant.—Henry L. Kaslin, City Clerk.

Joplin, Mo.—L. P. Cunningham is interested in construction of proposed 30-in. pipe line to pipe spring water from Joplin to Kansas City, Mo., at estimated cost of \$4,000,000; also contemplating construction of pipe line from Center Creek and Spring River Springs to cities in Joplin district.

Kansas City, Mo.—Citizens have voted \$1,000,000 bonds to increase capacity of water works; plans by Geo. H. Benzenburg, Milwaukee, Engineer.

Dillon, Mont.—City has decided to order half mile of pipe; estimated cost \$20,000.

Miles City, Mont.—Bids will be received about Aug. 22 for construction of a system of water works, sewerage and electric light plant; cost \$210,000. Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., Engineers.

Hartington, Neb.—Steel water tower 62 ft. high and an 80,000-gal. tank will be erected; cost \$8,000.

York, Neb.—Citizens will vote on municipal ownership of water works.

Lockport, N. Y.—Council has been requested to lay 6-in. water mains in Stevens and Webb sts.

Roxbury, N. C.—Citizens have voted \$20,000 bonds for water, street and sidewalk improvements.

Millersburg, O.—Bonds, \$8,000, have been sold for water works improvements; no engineer selected as yet.—Sam Franks, Jr., City Clerk.

Eugene, Ore.—Permission has been given the Fire and Water Committee to use part of \$20,000 proceeds of bonds for water works extension, for the purchase of meters.

Chambersburg, Pa.—Citizens have voted \$150,000 bonds to install gravity water system.

Coatesville, Pa.—Artesian water system has been recommended to Council by a Citizens' Water Committee, but Councilmen incline to an additional gravity supply from Brandywine.

Emporium, Pa.—Plans and specifications are being prepared for reservoir by Emporium Water Co.; water company will vote on bonding company for \$40,000, for improvements.

New Holland, Pa.—Citizens will vote on \$30,000 loan to establish water plant.

Somerset, Pa.—It is proposed to sink four wells 40 ft. in the white sand rock, where an artesian stream of water has been found; citizens will be asked to issue \$10,000 or \$12,000 bonds to pipe the water and install a meter system. L. E. Chapin, Pittsburg, Engineer; C. I. Shaver, Town Secretary.

Aiken, S. C.—Citizens voted \$78,000 bonds for extension of water works system, but afterwards election was declared void and another election will be held.

Charleston, S. C.—Establishment of municipal water and light plant is being considered.

Butler, S. D.—Citizens have, on July 8, voted to issue \$8,000 water works bonds.

Gettysburg, S. D.—Council has rejected bids for water works; new bids will be received.

Spearfish, S. D.—Council will take bids for 8,000 ft. of galvanized iron water pipe.

Johnson City, Tenn.—E. E. Ellsworth, Treasurer, wants prices on galvanized water pipe, wrought-iron corporation cocks, cut-offs, valve boxes, etc., for water works.

Bryan, Tex.—Proposals will be received Aug. 10, noon, for \$33,000 4 per cent. 40-year water, light and sewer plant bonds. —J. T. Moloney, Mayor.

Corpus Christi, Tex.—Dan Hugues, representing Layne & Bowler, well-borers of Houston, is making investigation for city with view of securing well-water supply system and firm will shortly submit proposal to city.

Dallas, Tex.—Council has provided \$13,000 for deep well in Oak Cliff.

Temple, Tex.—Water Commission has determined on several miles of extension of water mains, mostly in the north part of the city; about 20 additional fire hydrants will also be placed in the section, and a large filtration plant to take the place of the old open reservoir will be built this fall.

Provo, Utah.—Bid of E. H. Rollins & Son, Denver, for \$90,000 worth of water works bonds has been accepted.

Seattle, Wash.—The City Engineer has been authorized to construct a dam in Cedar River.

Seattle, Wash.—The construction of 2-in. mains on several streets has been authorized.

Grayton, W. Va.—Opposition has developed to the plans to dam the Buckhannon River for supplying Clarksburg and other cities with water as it may be likely to injure the local water supply.

Hinton, W. Va.—Hinton Water, Light & Supply Co. wants steam-driven pump for water works; operating conditions as follows: Steam pressure, 10 lbs.; water pressure from reservoir, 125 to 150 lbs.; distance from pumping station to reservoir, 1,800 ft.; diameter of pipe from pumps to reservoir, 10 in.; distance from pumping station to intake, 400 ft.; diameter of suction line, 8 in.; lift from intake to pump, about 12 ft.; required capacity of pump, 60,000 gals. per hour.

Morgantown, W. Va.—Plans are being prepared for 75,000,000-gal. reservoir.

Wheeling, W. Va.—An ordinance has been passed authorizing the Wheeling Traction Co. to construct a pumping station on the South Side.

Montreal, Que., Can.—Hering & Fuller, New York, N. Y., have completed report on need and suitability of installing a filter plant for city's water supply and favor St. Lawrence River as the most satisfactory supply; cost of plant about \$1,500,000.

La Crosse, Wis.—The Water Committee of Council has recommended construction of pumping plant and sedimentation basin, at cost of \$25,000.

Wausau, Wis.—Council has accepted plans by W. F. Lusk, Engineer, for improvements to water works; cost \$27,000; bids will be called for at once.

CONTRACTS AWARDED

Montgomery, Ala.—Montgomery Light & Water Power Co., R. J. Chambers, General Manager, to furnish electric power for operation of city water works; installation will be completed within few months; estimated that output of water will reach daily average of 8,000,000 gallons within few years.

Ft. Smith, Ark.—Water works extension, to Municipal Eng. & Const. Co., Chattanooga, Tenn., laying pipe, about \$10,000; to the United States Pipe Co., St. Louis, Mo., pipe and specials, about \$51,000.

San Francisco, Cal.—Laying 17 miles of pipe for auxiliary salt water fire protection system in the district north of Market and east of Powell sts. to Keystone Construction Co., 18th and Capp sts., lowest bidder, \$129,000; Engineer's estimate, \$135,000. —Marsden Manson, City Engineer.

Indianola, Ia.—Furnishing and laying 12-216 ft. 4-in. standard c.-t. p. pipe, 16 Eddy hydrants and 17 Eddy gates, and 4,600 lb.

of specials, to Smith & Son, for a total of \$7,000. —A. H. Gilliland, Engineer.

Kansas City, Kan.—Improvements and supplies for the water works department, Midland Bridge Co., three concrete foundations for pumps, \$1,698; U. S. Water and Steam Supply Co., 60,000 lbs. pig lead, at \$4.51 per cwt., \$2,706; J. B. Clow & Sons, valves, \$3,190; all of Kansas City.

Bangor, Me.—Filtration plant from plans of Jas. M. Caird, Troy, N. Y., to New York Continental Jewell Filtration Co., 15 Broad st., New York, N. Y.; total, \$69,120.

Grand Rapids, Mich.—Furnishing and installing pumping machinery in connection with the filtration plant, from plans of Hering & Fuller, 170 Broadway, New York, N. Y., to Jos. P. Rusche, 4 Portsmouth Terrace, \$51,518.

Collins, Miss.—To Guarantee Paving Co., city, for erection of reservoir for water works plant; reinforced concrete; capacity, 200,000 gals.

Cortland, N. Y.—W. B. Armstrong, Albany, through State Architect Ware, for improving water supply system of State Normal School, and renewing boiler equipment, \$7,080; C. E. Keeler, Cortland, for construction work, \$3,743.

Livonia, N. Y.—Water works, general construction, to Danz, Whitcomb Co., 418 Livingston Bldg., New Rochelle, \$3,200; pumps, to Rumsey & Co., Seneca Falls.

Murphy, N. C.—M. H. Kelly, Asheville, sewer and water contract, at \$12,000.

Eugene, Ore.—T. H. Ellis, building concrete foundation walls of filtration plant.

Erie, Pa.—Furnish carload of pig lead, to the John Wahl Commission Co., St. Louis, \$2.40 per hundred lbs., with a minimum shipment of 18 tons; 10 other bidders.

BIDS RECEIVED

Wilmington, Del.—Furnishing water pipe, U. S. Cast Iron Pipe and Foundry Co., 6 and 8-in., \$23.90; 12 and 16-in., \$22.40; Standard Cast Iron Pipe Co., pipe, \$23.20; special castings, \$49. —R. B. Woods, \$22.60 flat.

Donnelly, Minn.—Bids opened July 14 for construction of water works from plans of J. A. Rowat, Willmar; Des Moines Bridge and Iron Co., Des Moines, \$6,490; T. W. Schrueth, Fargo, \$6,725; Rowat & Bennett, Willmar, \$6,795; E. F. Webster, St. Cloud, \$7,132; Danforth & Frasier, Rochester, \$7,298; W. D. Lovell, Minneapolis, \$8,464.

New York, N. Y.—Totals of bids for furnishing, delivering and laying water mains in Brook, Chatterton, Grand, Kingsbridge, Park, Spofford, Townsend and Vyse aves: in Bartoldi, Bryant, Canal, West, St. Marys, 166th, 167th, 213th, 216th, 222d, 230th and 231st sts., Boroughs of Manhattan and Bronx: L. D. Gregory, 127th st. and 1st ave., \$42,639; S. Soraci, 170 Broadway, \$55,592; Jos. Burns, 147 E. 125th st., \$50,326; Hagerty & Drummond, 184 Broadway, \$49,548.

LIGHTING AND POWER

Opelika, Ala.—City has voted \$85,000 bonds for construction of electric light plant and water works.

Hamburg, Ark.—Improvement District Board of Commissioners will install electric light plant and water works.

Helena, Ark.—Helena Gas Co. has purchased and will install generating machine with capacity of 150,000 cu. ft. daily, doubling capacity of plant.

Nashville, Ark.—City has granted franchise to J. C. Stephenson Lumber Co., Nashville, to furnish electric lights.

Southington, Conn.—The contract for light with the Connecticut company will expire in August.

White Springs, Fla.—City contemplates vote on \$45,000 bond issue for lighting plant, sewerage, water works, etc. —G. S. Mobley, Mayor.

Dalton, Ga.—H. S. Jaudon Engineering Co., Savannah, has completed plans and specifications for electric light plant; equipment will include compound-condensing engines direct connected to generators; capacity, 500 hp.

Crawfordsville, Ind.—A municipal light plant may be built; F. P. Mount is interested.

Indianapolis, Ind.—The Board of Public Works has ordered the Indianapolis Lighting Co. to furnish 193 more street lights.

Martinsville, Ind.—City proposes to expend \$10,000 for improvements to electric light plant.

Hope, Kan.—City is considering plans for lighting with lights furnished by plant at Herington, Kan.; wires will have to be strung distance of nine miles.

Salina, Kan.—Citizens will vote Aug. 9 on proposition of accepting or rejecting new electric light franchise recently granted by Council.

Leitchfield, Ky.—Oelze Bros., Owensboro, will construct electric light plant.

Granite Falls, Minn.—Citizens have voted \$27,000 bonds to build dam at power house.

Bozeman, Mont.—Dr. Carl Schroeter, Chicago, has asked for franchise to erect \$100,000 gas plant.

Golah, N. Y.—Livingston-Niagara Power Co. has asked for permission to erect plant in this city to furnish power to cities in Monroe and Livingston counties.

Ogdensburg, N. Y.—New York and Ontario Power Co. will begin active work in development of proposed power generating plant at Waddington by October; plans are now being made for damming and drawing off the water and excavating 100,000 yds. of rock.

Durant, Okla.—City will install electric lighting plant.

Foss, Okla.—City contemplates installation of electric lighting system.

Altoona, Pa.—The Penn Central Light & Power Co. has passed an authorization to install one of the largest electric lighting plants in the State outside of Pittsburg and Philadelphia.

Collegeville, Pa.—Council is about to grant franchise to electric lighting company.

Charleston, S. C.—Mayor R. H. Rhett appointed special committee to select engineers to estimate cost of constructing electric light plant.

Greenville, S. C.—Home Light and Power Co., capital \$100,000, has been commissioned to do general electric light and power business in city, also general gas business; petitioners of company are: Lewis W. Parker, Thomas F. Parker, Joseph A. McCullough, J. E. Sirmine, W. J. Thackston, L. Rothchild, J. M. Greer, all of Greenville, and W. S. Lee, of Charlotte.

Lexington, Tenn.—C. P. Wilson has applied to Council for franchise to construct electric light plant.

Nashville, Tenn.—Nashville Gas & Fuel Co., which absorbed the Nashville Gas Co., has filed with Council application for a 50-year charter, with an option to city to purchase at end of 30 years.

Bryan, Tex.—City is considering proposition to establish electric light, water and sewer system; cost, \$100,000.

Devine, Tex.—Proposition has been offered by Messrs. Burnett & Fennenman, Indianapolis, Ind., to install electric light plant and ice factory.

Ennis, Tex.—Council has granted a franchise to the North Texas Gas Co. to lay pipes and mains through the streets and alleys for installation of a gas system to furnish natural gas to the people; the franchise was accepted for the company on the condition that a franchise be also secured from Waxahachie.

Gordon, Tex.—Gordon Water, Light & Ice Co. contemplates installation of light plant next year. —W. S. Dawson, Secretary.

Richmond, Va.—Charter has been granted by State Corporation Commission to Richmond Power Corporation for generating electricity from coal mines of Midlothian, near Richmond, for transmission and entering into competition with power plants already existing at Richmond, Petersburg, Norfolk and other points.

Morgantown, W. Va.—Union Utilities Co. has decided to construct concrete gravity dam across Decker's Creek. —H. R. Warfield, Manager.

Wheeling, W. Va.—Consumers' Electrical Co., 51 16th st., plans construction of power plant to cost from \$700,000 to \$900,000; engineers are working on plans; ordinance committee of City Council is considering granting of electric light franchise to company.

Stettler, Alta., Can.—City proposes to construct electric light plant; cost \$13,000. —John Galt Eng. Co., Wetaskiwin, Sask., Engineers; David Mitchell, Secretary-Treasurer.

CONTRACTS AWARDED

New Britain, Conn.—Lighting Central Park, to Jandus Electric Co., New York, \$66.50 for each cluster of three lights.

Fairhaven, Mass.—Edison Co., to install and maintain new street lights on 5-year contract, at \$14.25 per light per year for the first three years, and \$13.25 per light per year for the next two years; this is a reduction over the present price of \$1.35 per light per year for the first three years and of \$2.35 for the next two years.

Westfield, N. J.—John Golden, for constructing power house. —Mgr. Albers.

North Tonawanda, N. Y.—Lighting city, to Tonawanda Power Co., three years, \$55 each arc light.

Hamilton, O.—Ohio Fuel & Supply Co., furnish natural gas to city for 10 years.

BIDS RECEIVED

Buffalo, N. Y.—Power plant to be installed at pentitentiary, C. H. Everitt lowest bidder, \$69,918; other bidders, Lake Erie Boiler Works, \$75,900; John Lannen, \$72,111; Dunfee Construction Co., Syracuse, \$73,910; Barnd & Geiger, \$74,119.